United States Court of Appeals

for the Second Circuit

JOINT APPENDIX

76-4212

United States Court of Appeals

FOR THE SECOND CIRCUIT

NO. 76-4212

THE CONNECTICUT LIGHT AND POWER COMPANY,
Petitioner,

v.

FEDERAL POWER COMMISSION,
Respondent.

ON PETITION FOR REVIEW FROM THE
FEDERAL POWER COMMISSION

B
P/S

JOINT APPENDIX
THE CONNECTICUT LIGHT AND POWER COMPANY
AND
FEDERAL POWER COMMISSION

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Volume 2 of 3

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HOUSE DOCUMENTS

72d Congress, 1st Session

(December 7, 1931–July 16, 1932)

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EXAMINATIONS OF RIVERS AND HARBORS

VOL. 8

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1932

OCT -1 1933

HOUSATONIC RIVER, CONN.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, February 5, 1932.

Subject: Report on Housatonic River, Conn.
To: The Secretary of War.

1. I submit for transmission to Congress, my report with accompanying papers and illustrations, on Housatonic River, Conn , submitted under the provisions of House Document No. 308, Sixty-ninth Congress, first session, which was enacted into law with modifications in section 1 of the river and harbor act of January 21, 1927.

2. Housatonic River rises in northwest Massachusetts and flows about 132 miles through Massachusetts and Connecticut, discharging into Long Island Sound at Stratford, Conn. The drainage basin has an area of 1,948 square miles and is generally hilly country, the valleys of which are devoted to farming and dairying. A number of industrial centers lie in the basin, and the total population is about 375,000. The tidal portion of the river, about 13 miles in length, has been improved by the United States to provide a channel 7 feet deep at mean low water and generally 100 feet wide to Derby and Shelton, and breakwaters have been constructed for the maintenance of this channel at the mouth of the river. A further improvement to provide a channel 18 feet deep and 200 feet wide in the lower 5 miles of the river was authorized by the river and harbor act of July 3, 1930, subject to substantial local cooperation which has not as yet been furnished. The traffic consists chiefly of petroleum products and coal, and amounts to about 200,000 tons annually.

3. Above the tidal section the river has generally a steep slope and has been extensively developed for power. The extension of navigation improvement above the tidal section would be extremely costly, and prospective benefits are insufficient to warrant its serious consideration. Power is developed at 28 localities on the main stem of the river, with a total installed capacity of about 63,000 horsepower. These plants develop 1,018 feet out of a total of 1,950 feet of fall in the river. Studies of the district engineer indicate that approximately 97,000 horsepower of additional development is possible but would be economically feasible only with stand-by power from other sources. Storage for power is now fairly well developed, and the investigations of the district engineer indicate that the development of any considerable amount of additional storage would not be economically feasible. The rainfall is abundant and well distributed, and irrigation in the region is not practiced.

4. The damage from floods on the Housatonic River has been insignificant, and there appears to be no reason to anticipate serious flood damage in the future. No comprehensive flood control works are necessary.

5. The division engineer, concurring in general with the district engineer, reports that the existing project for improvement for navi-

1

REPORT OF THE DISTRICT ENGINEER

SYLLABUS

It is the opinion of the district engineer that:
a. Modification of the existing navigation project is not advisable at this time.
b. There is no flood problem.
c. There is potential water power capable of being developed on an economic basis.
d. Irrigation is not necessary.
e. The navigation project can not be coordinated with power development, flood control, nor irrigation.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Providence, R. I., June 25, 1931.

Subject: Report on Housatonic River, Conn., Mass., and N. Y.
To: The Division Engineer, North Atlantic Division, New York City.

1. INTRODUCTION

1. *Authority.*—This report is submitted under the provisions of House Document No. 308, Sixty-ninth Congress, first session, which was enacted into law, with modifications, in section 1 of the river and harbor act of January 21, 1927.

2. *Previous reports.*—The first preliminary examination was made in 1870 (H. Ex. Doc. No. 62, 41st Cong., 2d sess.) and recommended a survey at a cost of $5,000. The survey report following (H. Ex. Doc. No. 95, 41st Cong., 3d sess.) recommended improvement of the river to secure a draft of 7 feet at mean low water up to Derby by dredging the river bars, constructing a small jetty at Sow and Pigs Reef, removing Drews Rock, and constructing a breakwater at the mouth of the river, the channel to be 200 feet wide across the outer bar and 150 feet wide in the river. The entire cost was estimated at $404,961, of which $368,475 was for a breakwater at the mouth of the river and $36,486 for dredging bars at and above the mouth.

In 1888 a report was submitted (S. Ex. Doc. No. 103, 50th Cong., 1st sess.) modifying the design of the breakwater and reducing the channel width in the river section to 100 feet. The revised estimate of cost was $202,000, of which $175,000 was for the breakwater and $27,000 for dredging bars. The next survey was authorized by the river and harbor act of June 3, 1896. This report (H. Doc. No. 16, 55th Cong., 1st sess.) submitted a plan for improvement, providing a channel in the river 100 feet wide and 7 feet deep to be maintained by periodic dredging to a depth of 8 feet, extending the Stratford dike to the dike authorized by departmental action in 1893), and providing a channel across the outer bar 200 feet wide and 9 feet deep to be maintained by periodic dredging to a depth of 10 feet, at a cost of $15,000 for the extension of the dike and $4,000 biennially for dredging. House Document No. 970, Sixty-fourth Congress, first session, contains preliminary examination and survey reports made in compliance with the river and harbor acts of March 4, 1913, and March 4, 1915. These reports recommended an increase of project channel depth in the river up to Stratford, from 7 feet to 10 feet, no increase above Stratford, and extension of the Stratford dike 200 feet. This document also contained an unfavorable report upon a preliminary examination of the river with a view of securing a channel 20 feet deep to the head of navigation.

BEST COPY AVAILABLE

Item by Reference B

tonic watershed offer all sections of the area a means of transportation of freight and passengers. The locations of the railroads are shown on drawing No. 1.

III. NAVIGATION

15. *Description of the navigable section of the river.*—The essential characteristics as developed and reported in previous surveys are as follows: From Derby to Washington Bridge at Stratford, about 9 miles, the river flows through a gradually widening valley from 500 to 2,500 feet wide with rocky banks 10 to 30 feet high. Where the valley is wide there is a limited alluvial plain with an elevation of 2 to 4 feet above ordinary high water which is overflowed by combined high tides and extreme freshets. The river bed is from 500 to 1,200 feet in width, having a rocky bank on one side or both for most of its length with a well-fixed trace. Shoaling occurs at each channel crossover but as the stream is narrow the bars are short. Below Washington Bridge, the river flows through low alluvial flats and marshes, the banks suffering but little from erosion. The entire section is tidal with a mean range exclusive of winter months and periods of freshets of 6.4 feet at the mouth, 5.4 feet at Stratford, and 5.1 feet at Shelton and Derby. The water is always fresh about 4 miles below Shelton and the current is downstream, but south of Drews Bar the current alternates with the tide. The mean low-water slope during the usual navigation season from Shelton to Stratford is about 0.085 foot per mile, and in the 2¼ miles between Stratford and the mouth of the river there is a total slope of approximately 1 foot. Below the Shelton wharves, the channel is obstructed by 12 bars. The original low-water depth on the bar at the mouth and at the worst bars in the river was about 3 to 4 feet. Through these bars the existing project depths have been maintained by periodic dredging. Between bars the channel depths vary from 8 to 18 feet and more. The total length of channel exceeding 10 feet in depth is about 7.5 miles of which nearly 4 miles has depths of 12 feet and more. The river bottom is composed of compact gravel, shells, and clay at the narrow gorge near the mouth; of mud and sand in the pools; and of fairly loose sand on the bars with an increasing quantity of sand and gravel at both pools and bars in the upper 4 miles. Navigation above Shelton is limited to craft of less than 3-foot draft which may pass the Shelton Dam by means of a canal and locks and proceed as far as Otter Rock, which was and is the head of navigation, some 3 miles above the dam and 16.5 miles from the mouth. The usual navigation season is the entire year to Stratford and March 1 to December 31 from Stratford to Shelton. The average yearly discharge of the Housatonic River as recorded at Falls Village is 1.61 second-feet per square mile. Applying this factor to the drainage area of the Naugatuck River at Derby and the Housatonic River at Shelton, the average yearly freshwater discharge of these two streams is estimated at 3,046 second-feet. The mean flow for the lowest seven consecutive days was 216 second-feet. This occurred October 14 to 20, 1914. The river is subject to annual freshets which reach a height of 10 to 18 feet above mean low water at Derby and Shelton with an average of about 12 feet. These are of short duration and occur mainly in the spring. The river is crossed by a highway bridge and a railroad bridge at Stratford with bascule lifts, and a fixed railroad bridge and a fixed highway bridge at Shelton.

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1922
1923
1924

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20. *Conclusion.*—
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time.

21. *Characteristics*
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causing rapid run-off
Naugatuck River, d
valleys provide grou
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Item by Reference C

HOUSE DOCUMENTS

77th Congress, 1st Session

(January 3, 1941–January 2, 1942)

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EXAMINATIONS OF RIVERS AND HARBORS

VOL. 2

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1941

NOV -5 1942

Item by Reference C

77th Congress, 1st Session } HOUSE OF REPRESENTATIVES { Document No. 338

HOUSATONIC RIVER, CONN., MASS., AND N. Y.

LETTER

FROM

THE SECRETARY OF WAR

TRANSMITTING

A LETTER FROM THE CHIEF OF ENGINEERS, UNITED STATES ARMY, DATED MAY 29, 1941, SUBMITTING A REPORT, TOGETHER WITH ACCOMPANYING PAPERS AND ILLUSTRATIONS, ON RE-EXAMINATION OF HOUSATONIC RIVER, CONN., MASS., AND N. Y., REQUESTED BY RESOLUTION OF THE COMMITTEE ON FLOOD CONTROL, HOUSE OF REPRESENTATIVES, ADOPTED APRIL 2, 1936

July 31, 1941.—Referred to the Committee on Flood Control and ordered to be printed with two illustrations

WAR DEPARTMENT,
Washington, July 26, 1941.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

DEAR MR. SPEAKER: I am transmitting herewith a report dated May 29, 1941, from the Chief of Engineers, United States Army, on re-examination of Housatonic River, Conn., Mass., and N. Y., requested by resolution of the Committee on Flood Control, House of Representatives, adopted April 2, 1936, together with accompanying papers and illustrations.

The Bureau of the Budget has been consulted and advises that while there would be no objection to the submission of this proposed report, it would not be in accord with the program of the President, in the absence of evidence showing that the proposed works possess important defense values, to submit during the present emergency any estimate of appropriation for the construction of the project.

Sincerely yours,

HENRY L. STIMSON,
Secretary of War.

61419—41——1

Item by Reference C

16. *Transportation facilities.*—Railways, highways, and a navigable waterway provide all sections of the drainage area with adequate means of transportation for freight and passengers. The Berkshire Division of the New York, New Haven & Hartford Railroad follows the Housatonic River from the main line near Bridgeport, Conn., to Pittsfield, Mass. The Naugatuck Division follows the Naugatuck River from Derby to Torrington. A branch of the New York, New Haven & Hartford Railroad connects Danbury, Conn., with Waterbury, Conn. The Harlem Division of the New York Central Railroad follows the Swamp River and the Tenmile River through the watershed in New York. The main line of the Boston & Albany Railroad crosses the upper end of the watershed via the valley of the Housatonic River and the southwest branch of the Housatonic River. The locations of the railroads are shown on plate No. 1. In addition to the railroads, modern, hard-surfaced highways are maintained throughout the Housatonic Basin and provide adequate means of motor transportation. The Housatonic River proper is navigable from its mouth to Derby and Shelton, Conn. House Document No. 246, Seventy-second Congress, first session, outlines the existing channel depths for the Housatonic River and gives statistical data on its commercial use.

17. *Development of water resources.*—The water resources of the Housatonic River have been extensively developed for the generation of power.

(*a*) Housatonic River: The difference in elevation of normal low water at the Massachusetts-Connecticut State line and the top of the storage dam at Hinsdale, Mass., is about 777 feet, of which 517 feet are utilized for power and an additional 13 feet for storage, leaving 247 feet undeveloped. The present installed power capacity is estimated at 10,435 horsepower, distributed among 20 plants. The fall of the river in Connecticut is about 645 feet, of which 309 feet are developed for power, leaving 336 feet undeveloped. The present installed capacity is estimated at 63,700 horsepower at 5 plants. Summarizing the above, 826 feet of fall, out of a total of 1,422 feet, are utilized in the development of 74,135 horsepower at 25 plants, and 13 feet are utilized for storage. The Rocky River plant of the Connecticut Light & Power Co., which pumps water from the main river but utilizes no head on it, is not included in this summary. Plate No. 1 and table I of appendix A[1] give the location and pertinent data concerning these developments.

(*b*) Naugatuck River: The difference in elevation of normal low water at Torrington, Conn., and mean tidewater at Derby, Conn., is 528 feet, of which 121 feet are utilized for power development. At the present time 115 feet of head are developed for storage and 292 feet are undeveloped. The present installed capacity is estimated at about 2,202 horsepower, distributed among 7 plants. Plate No. 1 and table I of appendix A[1] give pertinent data on these developments.

(*c*) Rocky River: Although this river is but a small tributary of 41 square miles drainage area, it has been developed in a way to justify special comment. In addition to its steam plants and two hydroelectric developments on the Housatonic River, the Connecticut Light & Power Co. operates a plant on the Rocky River which is termed a "pumped-storage, peak-load development." A dam near the mouth of Rocky River creates a reservoir having 8.3 square miles of surface

[1] Not printed.

Item By Reference D

WAR DEPARTMENT : : : : : : : CORPS OF ENGINEERS

U.S. Army Corps of Engineers

LIST OF BRIDGES OVER THE NAVIGABLE WATERS OF THE UNITED STATES

COMPILED IN THE OFFICE OF THE
CHIEF OF ENGINEERS, UNITED STATES ARMY

AND REVISED TO

JULY 1, 1941

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1948

346

List of bridges over the navigable

Miles above mouth	Name, location, street, etc.	Owner	Type of bridge	Number of spans	Channel spans: Clear width normal to channel (in feet)		
					Left	Center	Right
	Hare Creek, Fla.						
0.3	Fau Gable	F. E. C. Ry. Co.				12	
	Horseshoe Creek, S. C.						
3	Walterboro, S. C.	Bradly Lumber Co.	F.	1		25	
	Horton Cove, Conn. (See Connecticut River)						
	Hoskin Creek, Va.						
0	Tappahannock, Va.	Virginia Department of Highways	F.	7		34	
3.6	Croxton Mills, Va.	Essex County	F.	3		21	
	Hospita Creek, Fla.						
	St. Augustine	Fountain of Youth Hotel Co.	F.	53		20	
	Houma Canal, La. (See Intracoastal Waterway)						
	Housatonic River, Conn.						
3.5	Stratford	State of Connecticut	B.	8		125	
3.6	Devon	New York, New Haven & Hartford R. R. Co.	B.	6		81.5	
7	Milford-Stratford	State of Connecticut	F.	9		167	
13.7	Shelton	New York, New Haven & Hartford R. R. Co.	F.	3			144
13.8	do	State of Connecticut	F.	5		84	
	Houston River, La.						
5.25	Lake Charles, La.	Kansas City Southern R. R. Co.	Sw.	1			27.4
	Howards Bay, Wis.-Duluth-Superior Harbor. (See also Duluth Canal, Minn.)						
	Lamborn St., Superior, Wis.	City of Superior	Sw.	2	128		123
	Hudson Bayou, Fla.						
.25	Sarasota, Fla.	City of Sarasota	B.	12		30	
	Hudson (Feaney) Creek, Oreg.						
.12	Gardiner, Oreg.	Douglas County	F.	1		35.5	
	Hudson River, N. Y. and N. J.						
11	George Washington Bridge, 178th St., New York City	Port of New York Authority	Sus.	1		3,418	
46.7	Bear Mountain Bridge, Peeks Kill, N. Y.	Bear Mountain, Hudson River Bridge Co.	Sus.	1		1,584	
75.6	Poughkeepsie, N. Y.	State of New York	Sus.	3	520	1,458	450
76.1	do	Central New England Ry. Co. (N. Y., N. H. & H. R. R.)	F.	5		490	

[1] At center of span.
[2] Operating regulations approved Mar. 16, 1916.
[3] Toll bridge.
[4] Operating regulations approved Aug. 20, 1935.
[5] Clearances referred to low-water datum for Lake Superior (601.6 M. T. N. Y.).

waters of the United States—Continued

Channel spans			Authorization		Plans approved by War Dept.	Date of completion	Operating regulations and closed periods	Purpose for which bridge is used	Miles above mouth
Clear height of lowest point of superstructure (in feet) above			Authorized by	Date					
M. S. L.	M. L. W.	H. W.							
.....	11	.....	State	1885	.....	.....	.....	Railroad	0.3
.....	8	6	do	1912	Nov. 11, 1920	June —, 1921	.....	Logging	3
.....	10	8.4	do	Mar. 21, 1922	Apr. 26, 1929	Jan. 26, 1932	.....	Highway	0.6
.....	5	3.4	.....	.....	.....	Prior to 1899	.....	do	3.6
.....	14	8.6[1]	do	1881	Nov. 28, 1921	Jan. 12, 1923	.....	do	.....
.....	37.7	32.3	do	.....	Feb. 20, 1919	Jan. 1, 1922	(2)	do	3.5
.....	25	19.5	do	.....	May 12, 1904	1905	(2)	Railroad	3.9
.....	22.6	17.5	do do	June 24, 1925	Sept. 21, 1938 Mar. 16, 1939	July 22, 1940 1905	.....	Highway [3] Railroad	.7 13.7
.....	34.7	30.2	do	.....	Sept. 18, 1916	Dec. 19, 1918	.....	Highway	13.8
10	10	6	do	R. S. 601	Oct. 18, 1899	1900	(2)	Railroad	5.25
MTNY									
606.6	1.6	1.3	do	.....	.....	Dec. 15, 1950	.....	Highway	.....
MSL									
.....	9	7.5	do	1909	June 16, 1926	Sept. 13, 1926	(2)	Highway	.25
.....	17	8	do	1903, 1917	June 14, 1935	Oct. 1, 1935	.....	do	.12
.....	252.07	248.27	Congress	Mar. 12, 1925	Dec. 13, 1926	Oct. 24, 1931	.....	do [4]	11
.....	158.1	153	do	May 25, 1922	Jan. 24, 1923	Nov. 26, 1924 [5]	.....	do [3]	46.7
[4] 140.2	[4] 141.2	[4] 137.6	do	Feb. 16, 1924	May 29, 1924	Aug. 25, 1930	.....	do [3]	75.6
.....	170.8	167.7	State	1871	Aug. 17, 1908 [6]	Dec. 31, 1888	.....	Railroad	76.1

[1] Operating regulations approved Oct. 11, 1929, as amended Jan. 6, 1935.
[2] Date completion reported to Chief of Engineers.
[3] For channel width of 750 feet of center span.
[4] Changes to superstructure.

NOTE.—For abbreviations see p. 3.

Item by Reference G-3

EXHIBIT H

Statement Of Project Works

The Shepaug Project is a run-of-the-river plant with limited storage capacity. For flows up to turbine capacity, Shepaug is operated at the most efficient gate openings. For flows exceeding turbine capacity, Shepaug is operated at full gate. During low flows, Shepaug is operated over the daily load peak period, using daily pondage.

Attached hereto are a profile and a map showing the location of Shepaug and the other developments on the Housatonic River.

The normal reservoir drawdown at Shepaug is 3.0 feet. This could be refilled by the weekend inflow for all flows equal to or exceeding 1-CFS per square mile of drainage area. From records of the U. S. Geological Survey Gauging Stations, average flow in the river is 1.67-CFS per square mile at Gaylordsville and 1.69-CFS per square mile at Stevenson. The deficiency for flows less than 1-CFS per square mile of drainage area can be made up, when necessary, by releases from the pumped storage reservoir at Rocky River.

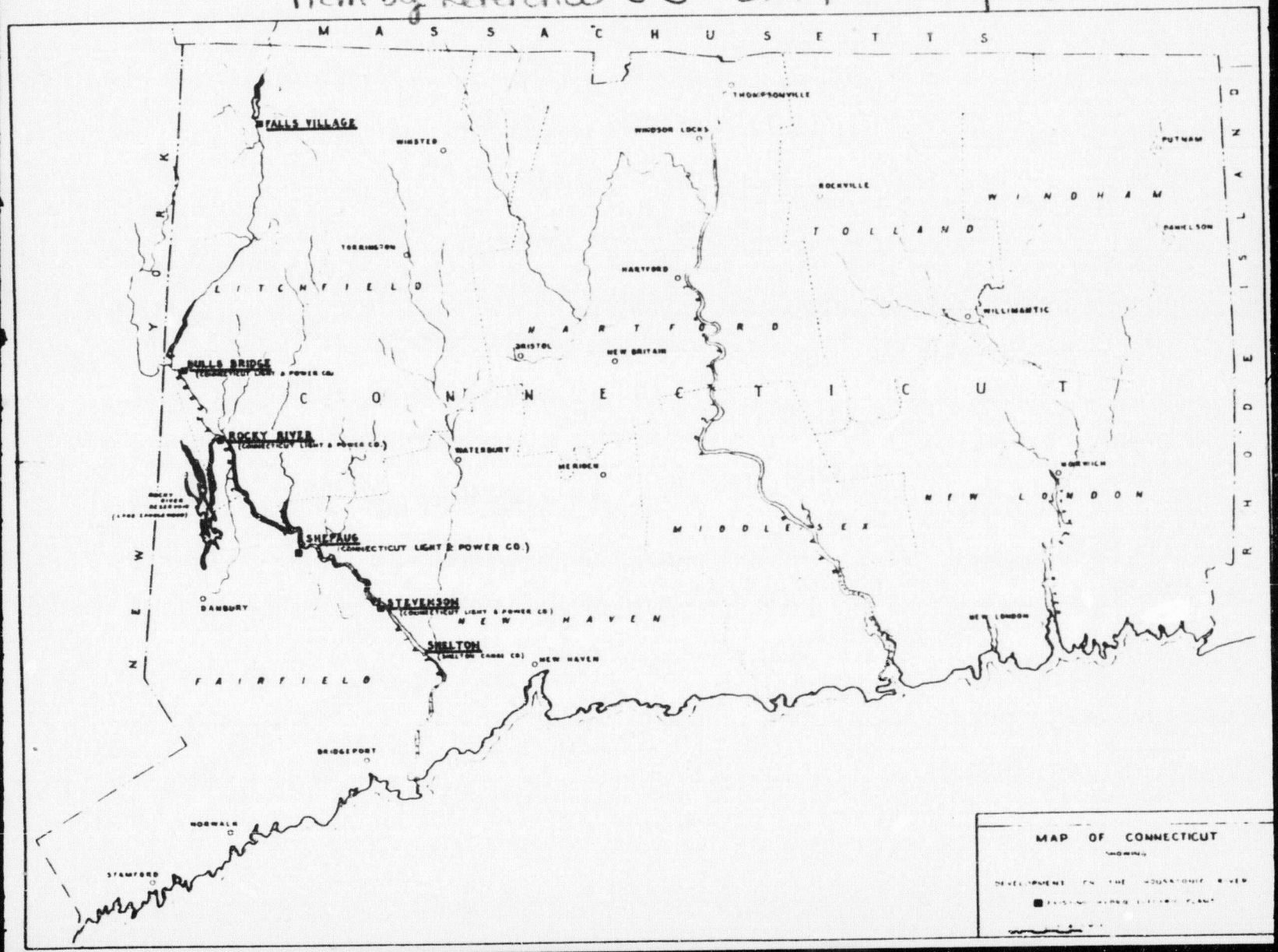
Flows exceeding turbine capacity are regulated by the Taintor gates. Flood flows are regulated by the five Taintor gates and two stanchion bays. Reservoir regulation is controlled so that water elevations in the reaches above Lover's Leap Gorge and the bleachery dam, so-called, in the vicinity of New Milford, are the same as before the Shepaug Project was built. Critical flow for this reach occurs at 20 cubic feet per second per square mile when the Shepaug reservoir will be at elevation 186.8 feet CL&P Company datum or lower. At this elevation, the discharge capacity at the dam is 34.7-CFS per square

mile, or 73.5% more than is required. For flows greater than 20-CFS per square mile, Lover's Leap Gorge takes over control in this reach. At 50-CFS per square mile, Shepaug reservoir elevation could be at 192.8 feet CL&P Company datum with no adverse effect in the river above Lover's Leap. At full-reservoir elevation of 200 feet CL&P Company datum, discharge capacity is 95.2-CFS per square mile. The greatest floods of record as reported by the U. S. Geological Survey, were 52.2-CFS per square mile at Gaylordsville on August 19, 1955, and 49.2-CFS per square mile at Stevenson on October 16, 1955. Discharge capacities at Shepaug are, therefore, almost twice the greatest flood flows of record in the Housatonic River.

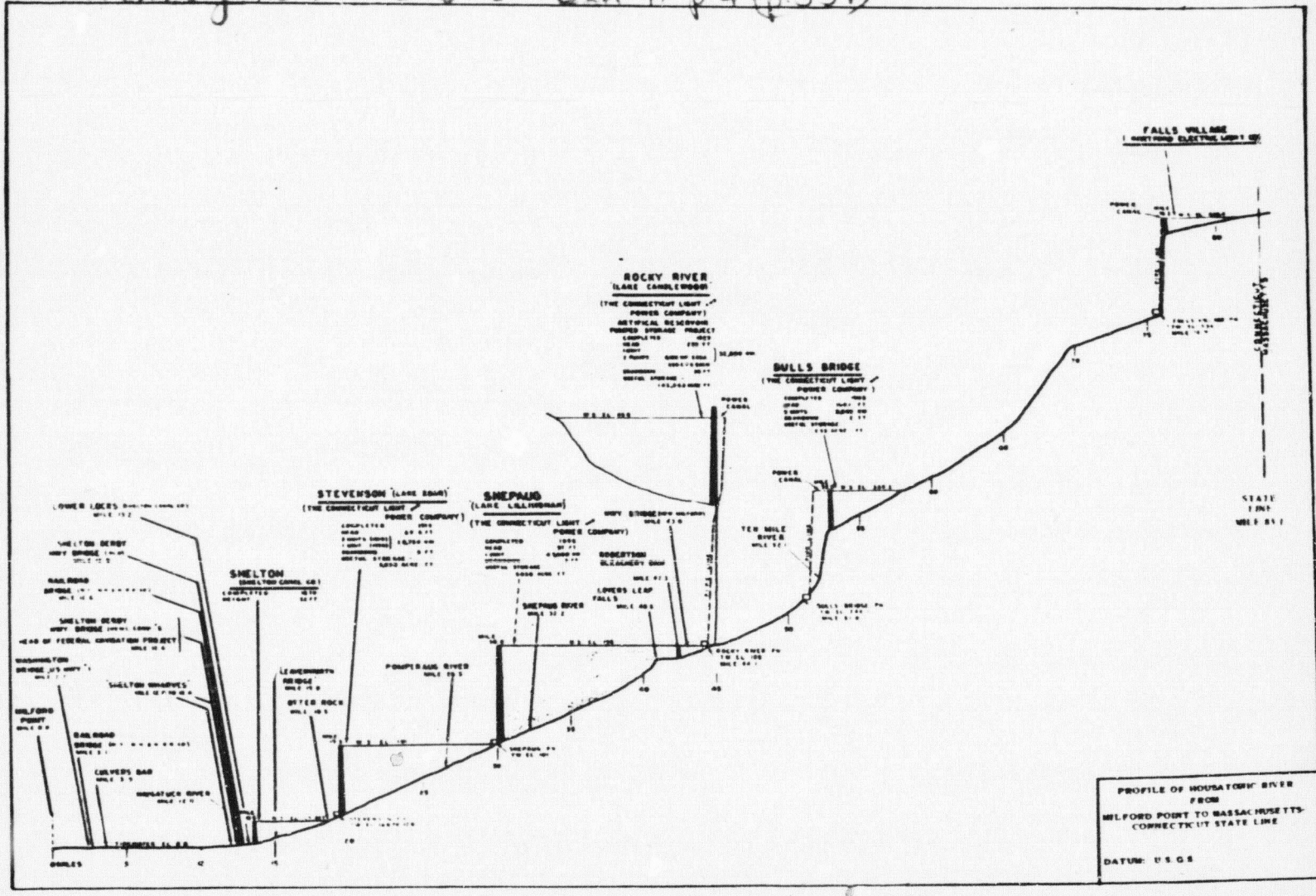
The reservoir would have insufficient volume to be of any significant value for downstream flood control, except that which is gained on routing floods through the reservoir for flows exceeding the critical flow.

On the rare occasions when it becomes necessary to utilize the stanchion bays, they would be replaced after the flood flows had receded to the point where the elevation in the reservoir at the dam was below elevation 177.0 CL&P Company datum, which is the sill of the stanchion bays. Flows at this time would be controlled by the five Taintor gates, whose sills are at elevation 172.0 CL&P Company datum.

Item by Reference G-3 Exh. p.3 p 350



Itemby Reference G-3 Exh H p4 (p.351)



Item By Reference G-3 EXHIBIT S-3

FEDERAL POWER COMMISSION

For Publication DOCKET NO. E-6437 Release No. 6442

Immediate Release

ENTERED
DEC 30 1952
LeBOEUF, LAMB
& LEIBY By GP

FPC FINDS THAT CONSTRUCTION OF HYDRO PROJECT ON HOUSATONIC RIVER IN CONNECTICUT BY ELECTRIC POWER, INCORPORATED, WILL NOT AFFECT INTERESTS OF INTERSTATE OR FOREIGN COMMERCE

Washington, D. C., December 30, 1952--The Federal Power Commission has issued an order finding that the construction and operation of a hydro-electric project on the Housatonic River in Connecticut by Electric Power, Incorporated, of Berlin, Conn., will not affect the interests of interstate or foreign commerce nor any public lands or reservations of the United States.

The FPC's finding means in effect that the company will not be required to obtain a license under the Federal Power Act for the construction and operation of the project.

The project, designated the Shepaug development, will be located on the Housatonic River at Newtown, Fairfield County, and Southbury, New Haven County, Conn. The proposed dam will be 1,412 feet long and 139 feet high, forming a reservoir having an area of 1,870 acres. The project also will include a powerhouse containing a turbine with a rated capacity of 57,000 horsepower and a generator with a rated capacity of 37,250 kilowatts.

-FPC-

Item By Reference G-3

EXHIBIT S-6
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The Connecticut LIGHT & POWER Co.

GENERAL OFFICE
BERLIN, CONNECTICUT

SHERMAN R. KNAPP
CHAIRMAN

P. O. BOX 2010 · HARTFORD, CONN. 06101

October 2, 1962

The Honorable Joseph H. Gutride, Secretary
Federal Power Commission
441 G Street, N. W.
Washington 25, D.C.

Dear Mr. Gutride:

Re: Docket No. IT-5501

The following is the response of The Connecticut Light and Power Company (the Company) to your letter of May 4, 1962, in which inquiry is made as to whether or not the Company is operating and maintaining any water power developments without a valid federal permit issued therefor, prior to June 30, 1920, and without a license issued under the Federal Power Act, and, if so, whether the Company proposes to file application for license for any of such developments.

The Company presently owns and operates eight water power developments. The Company's four principal developments are located on the Housatonic River, and are known as Stevenson, Shepaug, Rocky River and Bull's Bridge. The Company's Bantam development is located on the Bantam River, a small tributary of the Shepaug River, which is tributary to the Housatonic. The Company's Robertsville development is located on the Still River, a tributary of the Farmington River, which is a tributary of the Connecticut River. The Company's Scotland and Tunnel developments are located on the Shetucket and Quinebaug Rivers respectively. The Shetucket and Quinebaug Rivers are tributaries of the Thames River. A brief description of the Company's plants, together with certain pertinent hydraulic and engineering information in tabular form, is attached as Exhibit A to this letter.

The Company holds no specific federal permits for the operation and maintenance of any of its water power developments. In 1952, Electric Power Incorporated, a wholly-owned subsidiary of the Company, filed with the Federal Power Commission, a Declaration of Intention to construct the Shepaug development. On December 22, 1952, the Commission issued its finding that the construction and operation of the Shepaug development would not affect the interests of interstate commerce (Docket No. E-6437). Subsequent to the construction of the Shepaug development, Electric Power Incorporated transferred its interest in the development to The Connecticut Light and Power Company.

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The Company does not propose to file applications for licenses, under the Federal Power Act, for any of the water power developments which it now operates and maintains.

* * * * * * * * * * * * *

Your letter of May 4, 1962, forwarded (1) Opinion No. 357 and order issuing a license for constructed major Project No. 2288 to Public Service Company of New Hampshire; (2) order issuing a license for constructed major Project No. 2287 to Public Service Company of New Hampshire; and (3) press release to the opinion and order. Since it seemed to us implicit in the forwarding of such enclosures that the Commission was suggesting a reappraisal of the status of the Company's water power developments, in relation to the licensing requirements of the Federal Power Act, we sought the advice of counsel as to whether or not the recent developments in the law, relating to the licensing jurisdiction of the Commission, might suggest the necessity or desirability of making application for a license for one or more of our water power developments. Counsel has expressed the opinion that none of our plants requires license under the Federal Power Act.

Counsel's opinion was premised in part upon a study undertaken with the cooperation and assistance of Company executives and members of its engineering staff, which included research as to the historic, present and potential use of the five rivers involved and analysis of the hydraulic effect of the operation of the plants upon the waters in which they are located. In order to acquaint the Commission with the factual basis underlying the Company's decision not to apply for license for any of its plants, we are summarizing the material that has been assembled.

In further explanation of the form of this letter, we point out that we discuss first the question whether, in the light of the recent court and Commission decisions, one or more of the Company's plants might be held to occupy navigable waters of the United States.

Counsel has also advised us that, even though a power development does not occupy navigable waters of the United States, a Federal Power Commission license may still be required if the plant uses surplus water from a United States Government dam, or is located upon, or affects public lands or reservations of the United States, or if its construction and operation would affect the interests of interstate or foreign commerce. None of the Company plants uses surplus water from a United States Government dam and none is located upon or affects public lands or reservations of the United States. The second topic to be discussed below, therefore, presents certain of the hydraulic factors that have led us to conclude that no license is required for any of the Company plants on the ground that the construction and operation thereof affect the interests of interstate or foreign commerce.

I. NAVIGABILITY

The Housatonic River

The Housatonic River has its source in the Town of Washington in western Massachusetts and flows northwesterly, westerly and then southerly

through the Berkshire Valley for about 65 miles, entering Connecticut at Mile 83. From the Massachusetts-Connecticut State line, the river flows southerly through Connecticut to Bull's Bridge (Mile 52.9) and thence, southeasterly to tidewater at the twin cities of Shelton and Derby at Mile 13.5. From Shelton and Derby, the tidal reach of the river extends southerly to its mouth, where the river enters Long Island Sound at Stratford, Connecticut, approximately four miles east of the City of Bridgeport. The total length of the river from source to mouth is approximately 148 miles, of which the upper 65 miles are in Massachusetts and the lower 83 miles in Connecticut. Ten Mile River, a tributary, rises in New York State and joins the main river just below Bull's Bridge. Neither this nor any of the other tributaries is of significant size or importance except the Naugatuck, which, however, may be disregarded, since its confluence with the Housatonic is in the tidal reach below Shelton Dam.

The total fall of the river is approximately 1,422 feet, of which 462 feet are between the source and Pittsfield (Mile 132), 315 feet between Pittsfield and the Massachusetts-Connecticut State line (Mile 83), and 645 feet in Connecticut. A large percentage of the entire fall, both in Massachusetts and in Connecticut, has been developed for water power. The steepest gradients in Connecticut are at Falls Village (Mile 76), with a fall of 99 feet in about three-tenths of a mile; between West Cornwall Bridge (Mile 69.6) and Swifts Bridge (Mile 64.5), where the river falls 90 feet in five miles; and at Bull's Bridge (Mile 51), where the river falls 70 feet in less than two miles. From Bull's Bridge (Mile 51) the river falls 246 feet in 37.5 miles to tidewater, an average slope of about 6.6 feet per mile. In the natural state of the river, there were rapids at Shelton (Mile 13.5), Stevenson (Miles 19-20), Lover's Leap (Miles 38-40), and other points between Bull's Bridge (Mile 52) and Shelton (Mile 12), and a small natural dam at Still River (Mile 40.8).

The drainage area of the watershed is 1,948 square miles, of which 498.4 square miles are in Massachusetts, 215.4 square miles in New York, and 1,234.2 square miles in Connecticut. Of the latter area, 312 square miles lie in the watershed of the confluent Naugatuck River, which enters the main river at Derby (Mile 12) below the head of the tidal section.

The Housatonic River is tidal up to Mile 13.5, the site of the Shelton Dam, which was constructed in 1867-70 pursuant to authorization by the State of Connecticut. A federal navigation improvement has provided a seven-foot channel, m.l.w., from the mouth of the Housatonic to the Shelton upper wharves at Mile 12.4. A canal with its lower locks at Mile 13.2 provides passage for craft up to three feet in draft around the Shelton Dam. The pool behind the Shelton Dam extends approximately five miles upstream to Otter Rock (Mile 18.5) and serves as a recreational area for small-craft pleasure boating and for the training and races of the Yale University crews.

The Housatonic River has been the subject of a "308 Report" transmitted in 1932 (House Document No. 246, 72nd Congress, First Session) and a further report on "Re-examination in Particular Respect of Flood Control" in 1941 (House Document No. 338, 76th Congress, First Session). There were also prior surveys and reports by the War Department which are listed at page 7 of the 308 Report.

In none of these reports was there ever any suggestion that the river was navigable above Otter Rock* or any recommendation for improvement in the interests of navigation upstream of Mile 12.4, the head of the present federal navigation project and the head of tidewater. For example, it was stated by the District Engineer in the 308 Report (page 22) that

> "Navigation above Shelton is limited to craft of less than 3-foot draft which may pass the Shelton Dam by means of a canal and locks and proceed as far as Otter Rock, which was and is the head of navigation, some 3 miles above the dam and 16.5 miles from the mouth."

The District Engineer also stated (page 23):

> "I am also of the opinion that there is no public interest in, nor necessity for, improvement of the river above the limits of the existing project** and I do not recommend it at this time."

The Division Engineer stated that

> "There is apparently no public interest in nor necessity for improvement of the river for nagivation above the limits of the existing (federal navigation) project.** "

* * *

> "Extension upstream above tide water would not be practicable at a reasonable expense" (pages 5, 6).

The Board of Engineers for Rivers and Harbors stated that

> "The existing project** is sufficient for the present and prospective needs of navigation, and will not be affected by any developments which may be undertaken on the upper river" (page 3).

*There is some confusion in relevant documentary material as to the location of Otter Rock. The Army Engineers in the 308 Report refer to Otter Rock as "some 3 miles above the (Shelton) dam" (page 5), and as "some 3 miles above the dam and 16.5 miles from the mouth" (page 22). On the map and profile in the 308 Report (Drawing No. 1, opposite page 14), Otter Rock is shown on the map at Mile 16.5, but on the profile at Mile 22.2. Actually, we understand Otter Rock is located at the head of the pool impounded by the Shelton Dam, at Mile 18.5, a short distance below Eight-Mile Brook and about 0.8 mile below Stevenson Dam.

**i.e., the tidal reach below the Shelton dam.

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All four of the Company's Housatonic River plants are located in the reach of the river above Otter Rock. In order, upstream, they are Stevenson (Mile 19.3), Shepaug (Mile 30), Rocky River (Mile 44.2), and Bull's Bridge (Mile 52.9).

The Commission found in 1952 that the Company's then proposed Shepaug development would not affect the interests of interstate or foreign commerce. This finding is necessarily premised upon the conclusion that the Housatonic is not a navigable water of the United States, at least at or above the site of the Shepaug Dam (Mile 30).

In connection with the Declaration of Intention filed for the Shepaug development, the Company filed and the Commission must have considered factual data as to the entire reach of the Housatonic River in the State of Connecticut, particularly at the sites of the Company's other hydroelectric plants of which it then had direct knowledge. The Company has since 1952 proceeded upon the reasonable assumption that the Commission's prior investigation of the Housatonic demonstrates that the Housatonic is not a navigable water of the United States at the sites of any of the Company's four developments. Re-examination and reappraisal, with the advice of counsel, of the navigability of the reach of the river above Mile 18.5 has not led the Company to arrive at any different conclusion.

In addition to the physical characteristics of the river referred to above, our research indicates that the natural flow of the Housatonic was either too irregular or too inadequate and the gradient too steep to support navigation. No record has been discovered of any through commercial navigation on the river above Otter Rock. Early records relating to the construction of highways and proposed canals indicate clearly that the river was not used or usable for the movement of the products of the region to market and that, in fact, commercial movements were in a general east-west direction, while the river in that section runs north-south. In any event, commercial products were transported from the Housatonic Valley by overland routes rather than by water.

We have also explored the possibility that historically, the Housatonic River was used for logging purposes and have found no record of any such use. The principal industrial activities in the watershed in earlier times were the quarrying and iron fabricating industries. Neither of these industries is adapted to shallow draft river carriages, and no action was ever taken on any proposals for even the construction of a canal parallel to the Housatonic for use as an artery for freight of any kind.

There has never been any appropriation by the State of Connecticut to improve the Housatonic River for navigation purposes. The Connecticut Rivers and Harbors Commission, in its report to the Connecticut General Assembly in 1910, referring to the river above Derby, states, "Its bed is rocky and strewn with boulders and is not used for navigation."

In the light of the facts set forth above, and upon the advice of counsel, we have concluded that none of the Company's plants on the Housatonic River occupies navigable waters of the United States.

* * * * * * * * * * * *

II. EFFECT ON INTERSTATE OR FOREIGN COMMERCE

The Housatonic River Plants

We believe that it is reasonable to infer that when, in 1952, the Commission found that the Company's Shepaug project (Docket E-6347) would not affect the interests of interstate commerce, it viewed the Shepaug project, in accordance with its procedures in similar situations, in its relation to the Company's other existing hydro plants on the river - Bull's Bridge and Rocky River upstream, and Stevenson immediately downstream of Shepaug. In fact, the Shepaug declaration stated that the Shepaug development would be operated as a run-of-river plant "in conjunction with the existing Stevenson Development."

We are aware that the Commission's order pointed out that, since the Shepaug proposed project was the only one formally before it, its formal determination applied only to Shepaug. Nevertheless, since the Commission has consistently appraised the downstream effect on interstate commerce of any proposed development from the standpoint of how it could be operated in connection with other existing developments on the river, for the purpose of testing the maximum potential effect on interstate commerce, we feel that it is reasonable to assume that the Commission, in holding no effect on interstate commerce as to Shepaug, must in substance have reached that conclusion by taking into account the combined maximum effect of Shepaug, Stevenson, Bull's Bridge and Rocky River plants. The Commission's action on Shepaug had, of course, to take into account that it would be operating with the discharge from Rocky River and Bull's Bridge plants, and the combined potential effect of those three plants would be transmitted to Stevenson and passed on by it downstream with its added regulation potential.

* * * * * * * * * * * *

The Shepaug Development

As heretofore noted, the Shepaug development was constructed after a finding by the Commission that the interests of interstate or foreign commerce would not be affected thereby (11 FPC 1548 (1952)). The development was constructed in strict accordance with the plans filed with the Declaration of Intention.

The Federal Power Act specifically states that, upon such a finding by the Commission, final congressional permission is granted to construct the project in the manner described in the applicant's Declaration of Intention upon compliance with state laws.

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Item By Reference G-3

EXHIBIT 3
Page

The Honorable Joseph H. Gutride October 2, 1962

SUMMARY

On the basis of the foregoing facts, and in reliance upon the opinion of counsel, the Company has concluded that the continued operation and maintenance of its eight hydroelectric developments in Connecticut is not in violation of any of the terms and provisions of the Federal Power Act and that no applications for license need be filed by the Company for any of these developments.

Respectfully yours,

Sherman R. Knapp

Sherman R. Knapp
President

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SHEPAUG DEVELOPMENT

LOCATION

On the Housatonic River, Mile 30.0, approximately 13 miles downstream from New Milford, Connecticut

DAM

Length:	1,412 feet
Maximum Height:	147 feet (lowest foundation to roadway)

RESERVOIR

Surface Area:	1,870 Acres
Total Volume:	74,000 Acre feet
Usable Volume:	5,400 Acre feet
Usable Drawdown:	3 feet
Drainage Area Utilized:	1,391 Sq. Miles
Average Flow:	2,320 c.f.s.

POWER HOUSE

Average Net Head:	96 feet
Number of Units	One
Rated Capacity of Generator:	37,200 kw
Discharge Capacity:	5,650 c.f.s.

Item by Reference I

NORTHEAST FLOOD STUDIES

REPORT
ON
REVIEW OF SURVEY
FOR
FLOOD CONTROL

HOUSATONIC RIVER BASIN

CONNECTICUT, MASSACHUSETTS, AND NEW YORK

U.S. ARMY ENGINEER DIVISION, NEW ENGLAND
CORPS OF ENGINEERS WALTHAM, MASS.

13 SEPTEMBER 1963

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the cities of Danbury, Torrington, and Waterbury, Connecticut, and Pittsfield, Massachusetts.

Cities or towns lying wholly or largely within the basin having populations in excess of 10,000 are as follows:

Place	Population
Connecticut	
Waterbury	107,130
Bristol	45,499
Danbury	39,382
Torrington	30,045
Ansonia	19,819
Naugatuck	19,511
Shelton	18,190
Watertown	14,837
Derby	12,132
Newtown	11,373
Winchester	10,496
Seymour	10,100
Massachusetts	
Pittsfield	57,879

15. TRANSPORTATION

Two major rail lines provide passenger service for many towns and cities in the Connecticut portion of the basin and for about half of the towns and the one city in the Massachusetts and New York portions. Rail freight service also extends to many towns in the basin in each state. Numerous bus lines provide several communities, including some not on railroad routes, with direct access to New York City, Albany, Hartford, Boston and other major centers. Of the several airfields in the basin, one is a commercial airport offering regularly scheduled flights. The basin is crisscrossed by a network of paved roads which facilitate highway traffic.

The Housatonic River is navigable from Long Island Sound to Shelton, Connecticut, three miles upstream of the Shelton Dam, a private dam having a navigation canal and locks which permit passage

of light draft vessels. The lower reach of river carries heavy shipping as far up river as Devon, mainly coal for a power plant. There are also wharves for commercial shipping at Stratford and Derby. Above the Shelton Dam pool, navigation is limited to small boats confined to pools in the river.

Navigation on the Housatonic River has been improved as a Federal project providing for a channel 18 feet deep at mean low water and 200 feet wide from the mouth of the river to Devon (about 5 miles), and thence 7 feet deep and 100 feet wide to Derby and Shelton (about 8 miles), and providing for an associated breakwater, dike and jetty. Controlling depths in the channel are 18 feet in the portion from Long Island Sound to Devon and 3 feet from Devon to the upper end of the project.

16. EXTENT AND CHARACTER OF FLOODING IN REPORT AREA

While much of the area in Massachusetts and Connecticut drained by the Housatonic River and its tributaries, exclusive of the Naugatuck River watershed, is rural, its entire length is spotted with built-up areas, some substantial in size, which are subject to damaging flooding by high river stages.

Pittsfield, lying at the confluence of the East and West Branches of the Housatonic River, has suffered flood losses on both streams. A city of 57,900 people with a sizeable industrial complex devoted to the manufacture of electrical transformers and parts, paper, and textiles, it is the largest city in western Massachusetts and the largest community on the main stem of the Housatonic River.

Paper making has been an important item of manufacture in the Housatonic valley, with plants located in Lenox, Lee and Great Barrington, in Massachusetts, and New Milford, in Connecticut. Flooding has occurred frequently at these locations.

Danbury, the second largest community in the main river basin, is located on the Still River some 10 miles west of the Housatonic and approximately 12 miles south of the confluence of the two streams. Hat making, at one time the largest industry in Danbury, although still important is surpassed in total employment by the electric components and surgical supplies industries.

BEST COPY AVAILABLE

BEFORE THE

FEDERAL POWER COMMISSION

In the Matter of:	:	Project Nos. 2576
	:	2604
CONNECTICUT LIGHT & POWER COMPANY	:	2632
	:	2646

Hearing Room 5200
Federal Power Commission
825 North Capitol Street
Washington, D. C.
Tuesday, November 19, 1974

The above-entitled matter came on for hearing, pursuant to recess, at 10:00 a.m.

BEFORE:

ISRAEL CONVISSER, Presiding Administrative Law Judge

APPEARANCES:

(As heretofore noted.)

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PROCEEDINGS

PRESIDING JUDGE: The hearing in the case of Connecticut Light & Power Company, Project Nos. 2576, 2604, 2632, and 2646, will please come to order.

From the record of the Prehearing Conference, I gather that some efforts were made to agree on some of the facts. I do not find in the records that have been submitted to me any agreement from, from which I assume you were unable to agree on a statement of facts.

I might tell you that I am almost completely unfamiliar with the case. I have been very busy and have not had an opportunity, really, to go into the record to the extent I should have. So I am going to need a great deal of help from all of you.

What I would like to know to start with is precisely what the issues are in this case. For example, there is the question of navigability of, I guess, the Housatonic River. There seems to be a dispute as to whether the river is or was navigable.

Incidentally, I notice the word "navigability" has been used. I was about to look it up in the dictonary, but I was called in before that. I always thought the word was "navigable," but I may be mistaken.

I would like to be informed by counsel from either side whether the issue is, was the river ever navigable? If

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it was navigable at one time does it still have to be navigable, in order to support jurisdiction.

If it was not navigable at one time and since became navigable, either because of the license projects or otherwise, whether that would support Federal Power Commission jurisdiction.

I also would like to know what is the relevance of the question whether the generation of power as a result of these projects is energy that goes interstate, whether that supports jurisdiction of the project apart from jurisdiction of the sale or transmittal of electric energy.

I would like answers to these questions with respect to each of the projects.

Does any counsel feel ready, able, or willing, or all three of them, to enlighten me on these questions?

MR. McINTOSH: Your Honor, I am James R. McIntosh. I am attorney for The Connecticut Light and Power Company.

I think the questions you asked can be answered negatively by The Connecticut Light and Power Company. We believe, Your Honor, there is insufficient evidence available to establish either of the various (or any of the various) premises which might give rise to jurisdiction.

PRESIDING JUDGE: Excuse me. That is not my question. My question goes to the impact of the evidence.

I understand there are issues as to the facts. My question

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is, as to each of the questions I asked, whether or not an answer would support or not support jurisdiction. So do not bother addressing yourself to whether you agree that the answer is yes or no as to the fact itself. But tell me, if you can, what the answer is as to the impact, assuming the fact to be one way or the other.

MR. McINTOSH: We are prepared to concede if the Housatonic is presently navigable in the affected areas, that would be a basis for jurisdiction, if it is presently navigable.

PRESIDING JUDGE: Suppose it is not presently navigable, but was navigable at one time?

MR. McINTOSH: We believe that may not give rise to jurisdiction of the Federal Power Commission.

PRESIDING JUDGE: Do you concede it may?

MR. McINTOSH: I believe it could under certain jurisdiction, Your Honor.

PRESIDING JUDGE: Would these circumstances be too complicated for you to tell me what they are?

MR. McINTOSH: I think to the extent there is persuasive evidence the river was navigable before improvement by these projects, or navigable after these projects, but is no longer navigable for any reason, we would have a problem convincing you or the Commission it is not a navigable river.

To the extent there is evidance introduced of navigability at a pre-historic time, we contend that that is a basis for

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jurisdiction,

PRESIDING JUDGE: How far back, by pre-historic?

MR. McINTOSH: I think specifically before the United States of America.

PRESIDING JUDGE: Why would that date be significant?

MR. McINTOSH: Evidence regarding activities on the river before the formation of the States would not qualify as interstate commerce.

PRESIDING JUDGE: All right. How about the generation of power at these projects that is used in interstate commerce?

MR. McINTOSH: We do not concede that that is the case factually.

PRESIDING JUDGE: I understand.

MR. McINTOSH: I think we would still contest whether that is a valid basis for jurisdiction, even if it were.

PRESIDING JUDGE: Would what you have just said apply to all four projects?

I presume you would assert that there would have to be proof of navigability, or assuming you were wrong on the question of generation of interstate power, it would have to be with respect to each of the projects?

MR. McINTOSH: To establish jurisdiction over each of them.

There is a question about one of the projects, and work that has been done to modify it. I prefer to hear other counsel

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on that first.

PRESIDING JUDGE: Thank you.

Mr. Telleen, do you have further comment?

MR. TELLEEN: Yes.

It is Staff's position essentially that once navigability has been established, for any time in the past, a river is navigable for all time in the future.

PRESIDING JUDGE: You would not accept the time markoff as presiding formation of the United States, for example?

MR. TELLEEN: At this time, without having done detailed research on it, I think the formation of the United States and introduction of the concept of interstate commerce really would have very little, if anything, to do with the fact of whether or not a river is navigable.

PRESIDING JUDGE: How about the generation of interstate commerce?

MR. TELLEEN: An additional aspect of navigability which I think should be kept sight of in a hearing as this, is the proof of susceptability of a river for navigation, and there are possible extensive future navigation.

PRESIDING JUDGE: When you speak of "susceptability" I have a problem of how you establish susceptability.

MR. TELLEEN: Several cases on the issue of navigability, dealing with other rivers, have talked about susceptability to navigation, and the idea being that proof of specific type

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of river use can strongly underline the fact that that river is susceptible for more, for example, commercial navigation. That is the point I was trying to make.

PRESIDING JUDGE: Suppose -- I am just trying to visualize a situation -- suppose there were no evidence whatsoever that the river was actually used at any time for commercial navigation. What would be an illustration of proof of susceptability?

MR. TELLEEN: I think, say the extensive recreational use of a river in the past, that could be established, assuming absence of any indication of commercial navigation. Of course we can make no statement as to the facts in this case.

PRESIDING JUDGE: Would floating of logs, in your opinion, constitute navigability?

MR. TELLEEN: I believe it would, once that was established, yes.

PRESIDING JUDGE: Tell me about the generation of interstate power?

MR. TELLEEN: In terms of one of the projects, dealt with here, the fact of interstate generation -- interstate transmission of generation from that project, is of some importance, because of the Tom Bauk and beyond the Mantahala Decision.

PRESIDING JUDGE: I know these decisions by name. I do not recall what they held.

Generally can you say that those decisions held, in your opinion, that the generation of power that was transmitted

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was sufficient to support jurisdiction of the project by the Federal Power Commission? Is that the point of those cases?

MR. TELLEEN: Yes, Your Honor.

Well, Mantahal is a bit different. But that is essentially the holding in Tom Sauk.

As to the other three projects involved here, the Farmington decision would suggest the lesser importance of the fact of interstate transmission of generation from those projects. But it is still very possible interstate transmission of their generation would be of some improtance.

PRESIDING JUDGE: Can you expand on that a little? You use terms like "having significance."

MR. TELLEEN: The crux of my statement is that at this point I would not want to dismiss the issue of interstate transmission as an important factor as to those three projects. I think there are other issues which are much more important than that. But I do not want to say it is of no significance.

PRESIDING JUDGE: In your opinion, even if there were no proof that the power generated was transmitted interstate, if there were proof of navigability that would be sufficient to support jurisdiction?

MR. TELLEEN: Yes, Your Honor. Navigability among other points which could be established.

PRESIDING JUDGE: Yes. But I am trying to determine whether there must be a combination of these facts or whether

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each one separately could support jurisdiction.

Is there anything further you wish to tell me in this connection?

MR. TELLEEN: I don't believe so, if Your Honor thinks I have been responsive.

PRESIDING JUDGE: Yes. I think you have.

I expect all of you to brief these points rather carefully for me.

Sir?

MR. BENEDICT: I brought an official map of the Department of Transportation and Environment, which shows a very definitive outline of the interstate Massachusetts-Connecticut Housatonic River.

PRESIDING JUDGE: I do not want to limit you. But let us not go into the factual problems at this point. There will be reception of evidence. If nobody objects and you want to offer this map in evidence it will be received.

MR. BENEDICT: It is just for convenience.

PRESIDING JUDGE: If it is deemed relevant and material it will be received even if someone does object.

But I do not yet want to get involved in the facts. I want to get the issues clear in my own and everybody else's mind.

Do you have comments in that respect?

MR. BENEDICT: Yes, sir. I believe the river was always

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navigable. That any interruptions are solely those put in by the actual constructions of the Connecticut Light and Power Company or its predecessors.

PRESIDING JUDGE: In other words, you believe that there was navigability and that that supports jurisdiction regardless of what has subsequently happened, is that correct?

MR. BENEDICT: Yes, sir.

I also believe it transmits power in interstate commerce. And these two volumes I have here are, further, application of CL&P in July for a 345,000 kilowatt line to come out of the Rocky River plant between Milford and Danbury, with another line dependent on it.

Because of the almost, not quite, confluences of the Hoosic River into the Hudson near the headwaters of the Housatonic at Pittsfield, Massachusetts, there is the possibility that in light of coming energy requirements, former plans of canals, and so on, that had been gone into and not carried through because of economic value at the time might become so.

Also I think it should be remembered this river has a large estuary entering into Long Island Sound and affecting the territorial seas of the United States, for several States.

PRESIDING JUDGE: Will you have a witness to testify? Or will you yourself testify?

MR. BENEDICT: I shall do so.

PRESIDING JUDGE: Fine.

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Anyone else?

MR. KOSLOFF: Yes.

Your Honor, in addition to what Mr. Telleen stated, I want to emphasize we feel one of the very important matters involving jurisdiction here is the question of whether the Housatonic River was ever susceptible of use as a highway of trade and travel in interstate commerce. The question involving historical susceptability of use of the waterway for this purpose is in our view an important issue in this case in addition to the other issues which rarely are raised by this inquiry into jurisdiction.

Additionally I would comment on something Mr. McIntosh stated earlier. That is, that in his judgment any evidence concerning navigation prior to formation of the Union would not constitute use in interstate commerce. I contest that. I feel any evidence of susceptibility to use at any time would be sufficient to support the legal conclusion that the Federal Power Commission has jurisdiction here.

PRESIDING JUDGE: Thank you.

Does anyone else wish to be heard?

Mr. McIntosh, do you wish to add anything? We are talking of issues. I have not accepted anything anyone has said as to what the facts are.

As I tried to make clear, I am trying now only to determine the issues. I think those have been fairly covered, unless you

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feel you wish to add anything?

MR. McINTOSH: No, Your Honor. I do not think it would be appropriate at this time.

PRESIDING JUDGE: Very well.

We shall proceed, I suppose, to take evidence.

You have witnesses, Mr. McIntosh?

MR. McINTOSH: Yes, Your Honor.

I am uncertain as to the order of witnesses for the other parties. I don't know whether the Staff is going after us, or at the conclusion of this proceeding. There are a number of attorneys here.

Could we have a few moments off the record to perhaps agree on ground rules as to the order of witnesses, who is going to do what, when? I think it might be helpful to expedite things.

PRESIDING JUDGE: Off the record.

(Discussion had off the record.)

PRESIDING JUDGE: On the record.

MR. McINTOSH: Before we call the first witness, Your Honor, I would like to have incorporated in the record a number of Items by Reference. Incidentally, all these documents have already been referred to in Statements of Facts submitted by the Applicant in this proceeding.

The first document is a publication by the State of Connecticut entitled "Water Resources of Connecticut Report

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to the General Assembly by the Water Resources Commission." It consists of a cover page, and also we make particular reference to Table 4, List of Gauging Stations in Connecticut with Hydrologic Data.

I understand it is not necessary to submit these documents in evidence, but merely under the Rules of Practice to refer to them and ask that they be identified by reference. I have copies here, copies have been forwarded to the parties, and we have additional copies here.

PRESIDING JUDGE: Is this a document on file with the Federal Power Commission?

MR. McINTOSH: It is a public document of the State of Connecticut, Your Honor.

PRESIDING JUDGE: I am not sure this is the sort of thing you would incorporate as an Item by Reference. It is my understanding you can incorporate by reference documents on file with the Federal Power Commission.

MR. McINTOSH: I refer to Section 1.26(c)(2) of the Rules of Practice, which refers to public docket items of the Federal or State governments.

PRESIDING JUDGE: Is this to be treated as Items by Reference--

MR. McINTOSH: It says that they can be "offered in evidence without including them -- "... need not be produced or marked for identification, may be introduced in evidence

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as a public document, by specifying the document without ..." --

PRESIDNG JUDGE: Why do you not just identify it as an exhibit?

MR. McINTOSH: I will do that, then, Your Honor.

MR. TELLEEN: Your Honor, I also understood that Items not necessarily on file at the Commission but which are generally available to the public, whether government documents or what-not, can be listed and accepted as Items by Reference as opposed to exhibits which are incorporated and made available to the proceeding.

PRESIDING JUDGE: I very much prefer to have it offered as an exhibit. It seems to me the point of putting in Items by Reference is that they are very voluminous frequently, they are at the Commission's files, it is difficult to reproduce them, everybody can go to the Commission and get them.

Here you would have to distribute copies anyhow, I think it makes more sense to have a package of exhibits.

Unless someone is going to object to receipt of this document in evidence, I prefer that you offer it as an exhibit.

MR. McINTOSH: I will be pleased to do that. I have a series of these public documents. I have copies of them here. I will offer them as exhibits.

We have referred to one, of which I do not right now have copies, but will obtain them later in the day, I trust.

I will certainly make these available to everybody as

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exhibits, if that is the procedure you prefer to follow.

MR. TELLEEN: My concern is Staff's reference to certain items, which I think would be quite difficult to make copies of and supply as exhibits.

I am thinking of one published document in particular, which is for example in the FPC Library, and so forth. This is what I had in mind.

PRESIDING JUDGE: You were planning to have that put in as an Item by Reference, rather than merely an exhibit?

MR. TELLEEN: Yes, Your Honor.

PRESIDING JUDGE: Or something of which official notice could be taken?

All right. I will withdraw my objection.

MR. TELLEEN: Your Honor, another example would be a Government USGS Topographic Map. These are the sorts of things we had in mind as appropriately Items by Reference.

PRESIDING JUDGE: Well, all right.

MR. BENEDICT: I hope we get the same latitude. We have not brought anything new. But, for instance in rebuttal we might have something directly from the person challenged, if we were specifically challenged, and would like to put it in also as an exhibit. I have no objection to as much as possible going in for your consideration.

PRESIDING JUDGE: All right.

MR. McINTOSH: May I make it clear, Your Honor, whether

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they are identified as exhibits, Items by Reference, or merely noted in the transcript in some manner, makes no difference to the Connecticut Light and Power Company, Applicant in this proceeding. However, whatever procedure is followed here should not be construed as a waiver by us as objection to anybody else's introduction of materials in evidence.

PRESIDING JUDGE: As far as my own work habits are concerned, I might explain it makes it much simpler and easier for me to have a packet of exhibits which I can refer to.

However, is there going to be objection to this Item? I believe you have all seen it.

MR. KOSLOFF: I have not.

MR. TELLEEN: I have not seen it, Your Honor. I would like to.

PRESIDING JUDGE: Let us mark it as Item by Reference A, then.

(ITEM BY REFERENCE A. WAS MARKED FOR IDENTIFICATION.)

MR. KOSLOFF: We have no objection to the admission of this document, Your Honor.

MR. TELLEEN: Staff has no objection, Your Honor.

MR. BENEDICT: No objection.

PRESIDING JUDGE: This document is received in evidence as Item by Reference A.

(ITEM BY REFERENCE A HERETOFORE MARKED FOR IDENTIFICATION WAS RECEIVED IN EVIDENCE.)

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MR. McINTOSH: The second Item by Reference I ask be identified, Item by Reference B, is a document entitled "House Documents 72d Congress, 1st Session, Examinations of Rivers and Harbors, Vol. 3" consisting of 2 cover pages, letter of transmittal, 7 pages numbered 1 thru 7, and also pages 22 and 23, sometimes referred to as the "308 Report."

MRS. BOIKESS: Your Honor, does this mean the entire Report is incorporated by reference, or just the pages he is referring to?

PRESIDING JUDGE: Just the pages he is referring to. That is the purpose of your offer, is it not?

MR. McINTOSH: It is, Your Honor. If other counsel feel other pages of the same public documents are appropriate as part of the record in this proceeding, I assume they would make their own offer.

MRS. BOIKESS: Mr. Telleen also refers to this document in the testimony of one of his witnesses, or the FPC does. Is the FPC going to incorporate the whole document by reference?

MR. TELLEEN: We listed a specific page. I believe that is the one page we desire listed as an Item by Reference.

MRS. BOIKESS: Since the document is in the Library at the FPC, is there any objection to incorporating the whole document by reference, so we may refer to the whole document?

PRESIDING JUDGE: You may make the offer, if you wish,

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when your turn comes. I don't know that there is very much point to it, if you are not familiar with the whole document.

Nevertheless, if that is what you wish to do, you may do so.

Is anybody going to object to this item?

MR. TELLJEN: The Staff does not object.

MR. KOSLOFF: I would like to reserve. I have not had the opportunity to see it before.

PRESIDING JUDGE: I think the only objection you could have would be as a relevance or materiality. It is a house document, which I could probably receive anyhow.

MR. KOSLOFF: I may object on grounds of competence or relevance, if it is offered for the truth of the material contained therein. I may have objection.

PRESIDING JUDGE: I will receive this in evidence, and if we have another day or two of hearing and you have an objection, I will consider a motion to strike. If we do not have other days of hearing you may make your motion and I will consider the motion to strike.

Item B is received in evidence as Item B.

(ITEM BY REFERENCE B WAS MARKED FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: The third item is a document entitled "House Documents 77th Congress, 1st Session, Examinations of Rivers and Harbors, Vol.2" dated 1941. It consists of 2 pages,

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numbered 1 and 12, and it is a document supplementing the preceding 338.

MR. TEILEEN: Just the two pages?

MR. McINTOSH: Two pages, pages 1 and 12.

PRESIDING JUDGE: Item C for identification will be received in evidence as Item C.

(ITEM BY REFERENCE C WAS MARKED FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.

MR. McINTOSH: We would like next to identify as Item by Reference D a List of Bridges over Navigable Rivers of the United States, issued by the Department of the Army, 1948 Edition, Revised July 1, 1941.

Your Honor, this is a document we do not physically have here. We will get it later in the day. We would like to have it identified at this time, if we may.

PRESIDING JUDGE: This item is marked Item D.

MR. McINTOSH: It is pages 194 and 195 of that document, Your Honor, 2 pages. Those will be the substantive portions, Your Honor. There may be a couple other pages to assist in identifying the document.

(ITEM BY REFERENCE D WAS MARKED FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: Item by Reference E will be a document entitled "The Resources of the New England-New York Region, Part Two, Chapter XXII Housatonic River Basin, Connecticut

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Massachusetts New York, New England-New York Inter-Agency Committee." It consists of a cover page and pertinent portions of Section VIII, and pages 1 thru 5.

PRESIDING JUDGE: It is marked for identification as Item E and received in evidence as Item E.

MR. KOSLOFF: I would like to reserve my right to object.

PRESIDING JUDGE: Do you wish to object now?

MR. KOSLOFF: I don't, not yet.

PRESIDING JUDGE: The ruling stands as to all of these Items.

(ITEM BY REFERENCE E WAS MARKED FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: Item by Reference F, "State of Connecticut Public Document, Special: Report of Connecticut Rivers and Harbors Commission to the General Assembly, Printed by Order of the Legislature, Hartford, 1911," and consists of a cover page and pages 14 and 15, both of which have been copied on one sheet.

PRESIDING JUDGE: It is marked for identification as Item F. And it is received in evidence as Item F.

(ITEM BY REFERENCE F WAS MARKED FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: In addition, Your Honor, I believe there should be identified as Item by Reference the 4 applications initially made by The Connecticut Light and Power Company, in the

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various project designations which are now sought to be withdrawn. We do not have copies to hand out. They are of course documents on file with the Commission.

PRESIDING JUDGE: The 4 documents will be marked as Item by Reference G for identification.

Would it serve any purpose to have a subject heading?

MR. TELLEEN: It might, Your Honor.

PRESIDING JUDGE: Then let's give them the identification of G-1, G-2, G-3 and G-4.

Will you read off the project numbers?

MR. McINTOSH: The first, G-1, is the Bull's Bridge Project, Application dated June 1966.

MR. TELLEEN: I believe that is Project 2604.

PRESIDING JUDGE: Item by Reference G-1 for identification.

(ITEM BY REFERENCE G-1 WAS MARKED FOR IDENTIFICATION.)

MR. McINTOSH: The second one is the application regarding the Rocky River Project, Application dated December 1966.

That would be G-2.

MR. TELLEEN: Project No. 2632.

PRESIDING JUDGE: That will be Item by Reference G-2 for identification.

(ITEM BY REFERENCE G-2 WAS MARKED FOR IDENTIFICATION.)

MR. McINTOSH: The next is the Application for the Shepaug Project, dated February 1966.

MR. TELLEEN: That is Project No. 2576.

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PRESIDING JUDGE: Item for identification G-3.

(ITEM BY REFERENCE G-3 WAS MARKED FOR IDENTIFICATION.)

MR. McINTOSH: The last is the Application regarding the Stevenson Project, Application dated April 1967, Project No. 2646. That would be G-4.

PRESIDING JUDGE: G-4 for identification.

(ITEM BY REFERENCE G-4 WAS MARKED FOR IDENTIFICATION.)

PRESIDING JUDGE: Items G-1, G-2, G-3, G-4 for identification are received in evidence as Items G-1, G-2, G-3 and G-4.

(ITEMS BY REFERENCE G-1 THRU G-4 HERETOFORE MARKED FOR IDENTIFICATION, WERE RECEIVED IN EVIDENCE.)

MR. McINTOSH: Your Honor, I believe that covers the Items by Reference that we had in mind. I don't know whether anyone else wishes to cover Items by Reference they feel appropriate now.

PRESIDING JUDGE: They may do it when they present their case, I believe.

I would very much appreciate it after the hearing, if you have had a number of exhibits, if you could give me a package of all of your exhibits and of your items by reference except, of course, that which is much too much to reproduce. I would not want that reproduced, then. But it would help me to have a separate volume of your exhibits.

You may submit your witnesses.

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MR. McINTOSH: I call as our first witness Mr. S. Hale Lull.

PRESIDING JUDGE: You may take the stand, sir.

Whereupon,

S. HALE LULL

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. McINTOSH:

Q. I direct your attention to 4 pages of Prepared Testimony which bears your name and has been submitted in this proceeding. I ask you whether that testimony was prepared by you for submission in this proceeding?

A. It was.

Q. If I asked the questions contained in this prepared testimony, would you give the answers set forth therein?

A. Yes.

Q. Are those answers true and accurate to the best of your knowledge and belief?

A. There is one correction, sir, that I would like to make.

On page 3, at line 29, the word "Devon" appears. That should have said "Norwalk Harbor."

Q. Do you wish to make any other changes in your prepared testimony?

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A. No, sir.

MR. McINTOSH: Your Honor --

PRESIDING JUDGE: Just a moment.

Has the correction been made on the copy for the reporter?

MR. McINTOSH: Your Honor, that correction will be made on the copy to be given to the reporter. I ask that we be allowed to hold that for a moment, so we may mark exhibit numbers in it.

PRESIDING JUDGE: Very well.

The testimony of Mr. Lull will be copied into the record.

(The Testimony of S. Hale Lull, follows:)

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

TESTIMONY OF S. HALE LULL IN THE
MATTER OF THE CONNECTICUT LIGHT &
POWER COMPANY, PWR-LP
PROJECT NOS. 2576,
2604, 2632, and 2646

Q. Please state your name, business address and present position.

A. My name is S. Hale Lull. My business address is Selden Street, Berlin, Connecticut. I am the Vice President for Planning and Research of Northeast Utilities Service Company.

Q. What is Northeast Utilities Service Company and what is its relationship to The Connecticut Light and Power Company?

A. Northeast Utilities Service Company is a wholly owned subsidiary of Northeast Utilities, a public utility holding company whose subsidiaries include The Connecticut Light and Power Company ("the Company"). Northeast Utilities Service Company provides engineering and other services for the Connecticut Light and Power Company and the other operating subsidiaries of the Northeast Utilities system.

Q. Please describe your educational and employment experience and your professional associations.

A. I graduated from the University of Maine with a Bachelor of Science Degree in Electrical Engineering in 1938. I am a Registered Professional Engineer in Connecticut and Massachusetts, a member of the National Society of Professional Engineers, the Engineering Society of Western Massachusetts, and the Institute of Electrical and Electronic Engineers, Springfield, Massachusetts Section. I began my utility career with the Nebraska Power Company in 1939 and joined Western Massachusetts Electric Company as an engineer in 1945. In 1953 I became System Planning Engineer for Western Massachusetts Electric Company, becoming Assistant Chief Engineer in 1957, Chief Engineer in 1961 and Vice President - Engineering in 1964. I was elected Vice President of System Planning of Northeast Utilities Service Company in 1966 and assumed my present duties in April, 1974.

I am also a member and past chairman of the Planning Committee of the New England Power Pool.

Q. What are the capacities of the four projects that are the subject of these proceedings?

A. The Bulls Bridge plant has a generating capacity of 8 megawatts, the Rocky River plant is 32 megawatts, the Shepaug plant is 47 megawatts and the Stevenson plant has a capacity of 28.7 megawatts. These plants and the other generation and transmission facilities referred to later in my testimony are shown on Exhibit L-5 for identification.

Q. How are these four plants dispatched to meet Northeast Utilities system loads?

A. All of these plants are used to meet peak load requirements, except during spring periods when the volume of river flow dictates open gate operation. Of course, the Rocky River plant is a pumped storage facility, so its operation is affected by the economics of pumping rather than the volume of river flow.

Q. What is the relation of the capacity of these four plants to the load in the area?

A. The total capacity of the plants is 115.7 megawatts, which serves a portion of southwestern Connecticut having a projected 1974 peak load of 714 megawatts and a minimum load of 293 megawatts. The relative location of these plants to the load is shown on Exhibits L-1 through L-4 for identification, and the relation of the capacity of these plants to the load would indicate that none of the generation serves any load outside of the area shown on Exhibit L-1 through L-4.

Q. What is the basis for your conclusion that the capacity of these plants is entirely used in the load area shown in your exhibits?

A. Since power flow follows the path of least resistence, the loads closest to the hydro facilities, being much larger than the total capacity of those facilities, would consume the energy generated, so that there would be no potential for that energy to be exported to more remote load areas.

Q. Have you made any studies to demonstrate that the power flows from these plants behave as you have described?

A. Yes. The results of these studies are shown on Exhibits L-1 through L-4, which were prepared by members of my department under my direction and supervision.

Q. Could you briefly describe the studies which were conducted?

A. We have a digital model of our transmission system which enables us to show power flows on the system. By utilizing this model, we are able to ascertain where the power flows on the various transmission lines under any particular load and generating situation.

Q. Referring to your exhibits, could you explain what conclusion you have reached from these studies as to the power flows from these four hydro plants?

A. Exhibit L-1 shows a portion of the model transmission system under minimum load conditions with typical off-peak generation dispatch except full hydro generation. Under these conditions, generation from The Company's Norwalk Harbor fossil generating facility flows north from Devon toward the load area. All 115 kV line flows between the Southington Substation and the Devon Station are toward Devon, again toward the load area. At the Frost Bridge Substation, load is being supplied from the 345 kV system to the 115 kV system and the Southington to Frost Bridge Substation flows are westerly toward Frost Bridge and the load area. Finally, the flow between the North Bloomfield Substation and Frost Bridge is also toward Frost Bridge. Since all line flows show that there is no power being exported from the area where these hydro plants are located, we conclude that the hydro generation is being entirely used in this load area, even under the most conservative assumption of maximum hydro generation and minimum load.

Exhibit L-2 assumes the same minimum load conditions, but with no hydro generation. Load flow conditions are generally the same, except with the expected increase in magnitude.

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Exhibit L-3 assumes a 100% load condition with typical full load system generation dispatch including full hydro generation, and again shows that there is no power exported from the area.

Finally, Exhibit L-4 assumes the same full-load condition as Exhibit L-3, but with no hydro generation. As in the previous three exhibits, it can be seen that no power is being exported from the immediate area of the hydro facilities.

A comparison of Exhibits L-1 and L-3 with Exhibits L-2 and L-4 not only demonstrates that no power is exported from the area, but also indicates that the magnitude of power imported to the area remains substantial whether or not these hydro plants are generating.

Q. Based on your knowledge of the Northeast Utilities' transmission system, the Company's hydro plants and the studies which you have conducted, have you reached a conclusion as to whether any of the power generated by these hydro plants could leave the State of Connecticut by interconnections to other states?

A. Yes I have. As indicated on Exhibit L-5, the only points of interconnection by which this power could flow into other states are the 138 kV submarine circuit at Norwalk Harbor Generating Station to Long Island, the 345 kV line which feeds through the Southington and Frost Bridge Substations and the 115 kV system leading from the Frost Bridge Substation to the Southington and North Bloomfield Substations. Exhibits L-1 and L-3 show that under all circumstances the flows from these points are toward, rather than away from the four hydro plants. Therefore, the power generated by these plants could not leave the State of Connecticut by interconnections to other states.

F. P. C. PWR-LP
Project Nos. 2576, 2632, 2646

[illegible]

[illegible]

[illegible]

[illegible]

S. Nate Lull, being duly sworn, deposes and says: that he has read the foregoing questions and answers intended as his testimony in this proceeding, and if asked the questions therein his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge, information and belief.

S. Nate Lull

Subscribed and sworn to before me
this 16th day of October 1974

Notary Public

My Commission expires: [illegible]

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BY MR. McINTOSH:

Q Did you prepare or supervise the preparation of 4 Load Flow Diagrams identified in your prepared testimony as Exhibits L-1, L-3, L-3, and L-4, each consisting of a 1-page Diagram?

A I did.

Q Do you sponsor these 4 Diagrams as exhibits in this proceeding?

A I do.

MR. McINTOSH: I ask that the 4 Diagrams be identified as Exhibits 1, 2, 3, and 4, respectively in this proceeding.

PRESIDING JUDGE: Will there be any objection to these exhibits?

MR. TEILLEN: Not from the Staff, Your Honor.

MR. KOSLOFF: No, sir.

PRESIDING JUDGE: They will be received in evidence as Exhibits 1, 2, 3, and 4.

I am not bothering just to mark them.

(THE DOCUMENTS REFERRED TO WERE MARKED EXHIBIT NOS. 1 THRU 4 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

BY MR. McINTOSH:

Q Do you sponsor a single-page map entitled "Main Electric Systems of Southern New England," identified as Exhibit L-5 in your prepared testimony?

A I do.

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MR. McINTOSH: I ask that that be identified as Exhibit 5, Your Honor.

PRESIDING JUDGE: Is there any objection?

(No response)

It is received in evidence as Exhibit 5.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 5 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: Your Honor, it is not clear to me whether Mr. Lull's 4 pages of prepared testimony have been accepted in evidence.

PRESIDING JUDGE: I have ordered them copied into the record.

MR. McINTOSH: Mr. Lull is available for cross-examination.

PRESIDING JUDGE: Does he have rebuttal testimony?

MR. McINTOSH: No, sir.

Excuse me, Mr. Lull signals he has a change to make in one exhibit.

THE WITNESS: In Exhibit L-1 there is a line, "115 kv transmission line," shown extending from the Triangle Substation at the extreme left of the page to the Shepaug Substation. On that line there are 2 numbers, one above the line showing "34.7 megawatts" and a number below the line showing "11.5 megavars." The arrow associated with the number of "34.7" is incorrect. It should point toward the Triangle Substation instead of toward

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Shepack Substation, indicating a flow in that direction in the direction of the Triangle Substation.

PRESIDING JUDGE: Will you see to it that the reporter gets a corrected copy of that exhibit?

MR. McINTOSH: We have just given the reporter a corrected copy, and we will supply one to Your Honor.

PRESIDING JUDGE: Does that complete your exhibits on his direct?

MR. McINTOSH: It does, Your Honor.

PRESIDING JUDGE: Why do you not introduce his rebuttal testimony, if he has any?

MR. McINTOSH: He has none, Your Honor.

PRESIDING JUDGE: You are excused for the time being, Mr. Lull.

Thank you.

(Witness temporarily excused.)

PRESIDING JUDGE: It is now, according to my highly inaccurate watch, 11:20. Why do we not take a break until 11:35, at which time we can perhaps make some progress before lunch.

(Whereupon, at 11:20 a.m., a recess was taken to 11:35 a.m.)

PRESIDING JUDGE: The hearing will please come to order. Mr. McIntosh, will you put on your next witness, please?

MR. McINTOSH: Your Honor, I would like to call

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Antonio Ferreira.

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Whereupon,

ANTONIO FERREIRA

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. McINTOSH:

Q I refer you to 12 pages of prepared testimony and 6 pages of rebuttal testimony, Mr. Ferreira, and ask you if that testimony was prepared by you for submission in this proceeding?

A It was.

Q If you were asked the questions contained in this prepared testimony and rebuttal testimony, would you give the answers therein set forth?

A Yes.

Q Are those answers true and accurate to the best of your knowledge and belief?

A They are.

Q Do you have any corrections or changes you wish to make in your prepared testimony?

A Yes.

In my rebuttal testimony on page 5, line 36, ythe letters "W-O" should be "t w o" the word "two."

MR. McINTOSH: Your Honor, the pages to which Mr. Ferreira

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refers is the second to the last page. Unfortunately the pages of Mr. Ferreira's rebuttal testimony were not numbered. We will submit to Your Honor and to the reporter a copy of the prepared testimony, properly numbered, and with the correction.

I request that the prepared testimony and rebuttal testimony of this witness be copied into the record.

PRESIDING JUDGE: It is so ordered.

(The Testimony of Antonio Ferreira; the Rebuttal Testimony of Antonio Ferreira, follows:)

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UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

TESTIMONY OF ANTONIO FERREIRA IN THE MATTER OF THE CONNECTICUT LIGHT AND POWER COMPANY, PWR-LP PROJECT NOS. 2576, 2604, 2632, and 2646

Q. Please state your name and address.

A. Antonio Ferreira. My business address is Northeast Utilities Service Company, P O. Box 270, Hartford, Connecticut 06101.

Q. Please state the name of your employer and your position with such firm.

A. I am employed by the Northeast Utilities Service Company as Chief of Generation Civil Engineering.

Q. What is your relationship to the owner and operator of the projects in this proceeding?

A. The Northeast Utilities Service Company provides, among many other things, system planning, engineering, and operations services for the affiliated companies of the Northeast Utilities system, The Connecticut Light and Power Company being one of the affiliates. Under the general direction of the Manager of Generation Systems Engineering, I have supervisory responsibility of the Civil Engineering Branch of the Generation Systems Engineering Department. The Civil Engineering Branch contains two sections, a Structural Section and a Hydraulic Section. The Hydraulic Section has the responsibility for the performance of the engineering functions relating to the planning, development engineering and design of new hydroelectric generating facilities and new hydraulic facilities of fossil and nuclear projects. It also has similar responsibilities for modifications and betterments to existing hydroelectric and the other System hydraulic facilities.

Q. Would you please state briefly your formal education, work experience in the electric utility industry and other related engineering fields, and memberships in professional societies and organizations.

A. I was graduated from the University of Massachusetts with a Bachelor of Science in Civil Engineering degree in 1950. During the period 1957 to 1962, I took numerous evening courses in Mechanical Engineering at Western New England College.

After graduating from the University of Massachusetts in 1950, I was employed by the Massachusetts Department of Public Works as a Resident Engineer on contract highway projects. My duties included

preparation of construction cost estimates, field layout, and field supervision of construction.

In 1951 I accepted employment with the Western Massachusetts Electric Company as Junior Engineer. In addition to structural engineering design work, my duties involved considerable work in hydraulic engineering, including river flow and load curve studies, system capacity studies, analysis of flow and load duration data, power-energy and hydro generation allocations on system load curves.

During the years 1952 to 1954, I served with the Armed Forces including a major assignment as Instructor and Special Projects Engineer at The Engineer School, Fort Belvoir, Virginia. Upon my discharge from the Army in 1954 I rejoined Western Massachusetts Electric Company. My duties then consisted of designing hydro-electric facilities including trash rack installations, headgate facilities, station ventilation systems, and flood control retaining structures. I conducted an evaluation of Western Massachusetts Electric Company's existing hydroelectric facilities to determine their combined system capacity. I performed basic studies for feasibility investigations of pumped storage facilities and conventional hydroelectric projects. In 1959 I became Assistant Engineer in the Hydraulic Section and the majority of my duties were devoted to hydraulic engineering design and investigations and in 1961 I was promoted to Senior Assistant Engineer.

In 1963 I assumed the position of Hydraulic Engineer in charge of the Hydraulic Section and was responsible for all the hydraulic engineering and planning functions of Western Massachusetts Electric Company. Among the numerous projects engaged in either directly by myself or under my direct supervision were: automation of hydro-electric generating stations and associated facilities, investigation of upstream benefits, system hydro capacity evaluations, coordination of hydroelectric generation with city water supply operations, and feasibility and site investigations of pumped storage projects. As a direct result of the latter investigations, the 1,000,000 kilowatt Northfield Mountain Pumped Storage Project, FPC No. 2485, evolved as a prime project and was carried forward through the design and construction phases to completion in 1973. My responsibilities on this 1,000,000 kilowatt project were as Project Engineer and Manager for Northeast Utilities. The detailed engineering and construction management were performed by Stone and Webster Engineering Corporation. In 1966, I was appointed to the position of Chief Hydraulic Engineer for the Northeast Utilities Service Company and became its Chief Civil Engineer in 1973. On April 1, 1974 I accepted my present position of Chief of Generation Civil Engineering.

I am a Registered Professional Engineer in the Commonwealth of Massachusetts. I am a member of the Hydraulic Power Committee of the Edison Electric Institute and Chairman of the Hydraulic Working Group for the New England Planning Committee. I was an Associate Member of the American Society of Civil Engineers for twelve years and have been a Member for seven years.

Q. Mr. Ferreira, what is your familiarity with the Stevenson, Shepaug, Rocky River, and Bulls Bridge projects?

A. These projects are owned and operated by The Connecticut Light and Power Company, an affiliate of Northeast Utilities. The projects are part of the Northeast Utilities System's hydroelectric generating facilities for which the Generation Civil Engineering Branch has engineering responsibility. The technical portions and descriptions of the projects, as detailed in the Applications for License which were filed with the Commission in 1966 for Shepaug, Rocky River, and Bulls Bridge and in 1967 for Stevenson, are used by the engineers in our group and are reviewed and updated as appropriate. The hydraulic engineering section, under my direct supervision, has performed various engineering studies and design projects associated with the projects. Inspections of the projects have been performed, periodically, over the past eight years, either by me or by other engineers under my direction and supervision.

Q. Mr. Ferreira, would you please provide a brief summary description of the projects?

A. The Applications for License, on file with the Commission, contain a detailed description of the project works and include a statement of operation. The description and other information in those applications concerning the projects and the Housatonic River is incorporated in my present testimony by reference. Drawing generally from the descriptions therein, the projects can be briefly described as follows:

The Bulls Bridge project is located on the Housatonic River in the towns of Kent and New Milford in the State of Connecticut. It is a run-of-river hydroelectric development consisting of a river reservoir impounded behind two small dams, Horseshoe Dam and Spooner Dam, connecting a river island with the shorelines, an open intake canal approximately two miles long, canal headworks, and a powerhouse. The powerhouse contains six horizontal shaft units rated 1400 kilowatts each for a station total of 8400 kilowatts. At an average net head of 103 feet, 1250 cubic feet per second are required for this total station rating. The plant has an average annual energy output of 44,560 megawatt hours.

The reservoir, called Bulls Bridge Pond, has a surface area of 120 acres at normal full pond, USGS elevation 354.0 feet, and has a drainage area of 784 square miles. The normal operating fluctuation of the pond is two feet which is equivalent to 233 acre-feet of storage, the pond having a total volume of 1800 acre-feet.

The Bulls Bridge Project possesses very limited storage capacity. For flows up to turbine capacities, Bulls Bridge is operated at the most efficient gate openings. For flows exceeding turbine capacities Bulls Bridge is operated at full gate. During low flow periods, Bulls Bridge is operated over the daily load peaks. For a flow of only 0.5 cfs per square mile of drainage area, which is exceeded for 80% of the time in a normal year, the normal reservoir drawdown could be refilled in a little over seven hours.

Horseshoe Dam, which is the main dam, was built in 1903. It is of concrete construction and forms an arc of 109.6 foot radius, with a crest length of 203 feet and measuring some 195 feet between abutments. The height of the dam is 15 feet above the former stream bed with a maximum height above the subgrade ledge of approximately 24 feet. The control or weir dam, Spooner Dam, built in 1903, is of rockfill construction with an upstream masonry facing and a concrete envelope, 156 feet long with a crest length of 130.8 feet between abutments. The dam has a height of 17 feet above ledge, including 3-foot high flashboards.

Water is conveyed from the pond to the powerhouse headworks through an open canal varying in section from rock and earth cuts to rockfill and earth-fill dikes. The beginning of the canal extends approximately 600 feet to the canal headworks, then runs for 1280 feet to the eight acre Cemetary Pond and continues on for approximately 7850 feet to the powerhouse headworks and intake works. Two above ground steel penstocks, one 8 feet in diameter, the other 13 feet in diameter, convey the water under U.S. Route 7 to the powerhouse. The forebay pool at the end of the canal is formed by earthen dikes with a concrete core wall.

The powerhouse, built entirely of concrete, contains the six horizontal, double runner water wheels directly connected to six generators.

Construction was initiated in 1902 and the final step in construction, filling the canal with water, was accomplished on December 10 and 11, 1903. The project was obtained by CL&P in August, 1917. The original cost of the project as of September 30, 1965 was approximately $3,000,000, as shown in Exhibits N and Q of the application.

The Rocky River project is a seasonal pumped storage hydroelectric development consisting of an upper reservoir, named Lake Candlewood, a combination wood-stave and steel penstock running from this reservoir to a powerhouse located on the west bank of the Housatonic River, which is utilized as the lower reservoir. The powerhouse is about 44.3 miles north of the mouth of the Housatonic River and approximately 7 miles south of the Bulls Bridge project, while the main dam of Lake Candlewood is on the Rocky River, about one mile above its confluence with the Housatonic River. The Rocky River is not used or usable for navigation. The project is within the counties of Fairfield and Litchfield, in the State of Connecticut.

Lake Candlewood, the upper reservoir, has a surface area of 5600 acres at USGS elevation 430 feet with a natural drainage area of 40.4 square miles. It is 11 miles long and 1-3/4 miles across at the widest part with a shoreline of 60 miles. The islands and canal increase the shoreline length to 74 miles. The reservoir is impounded behind a main dam and four dikes. It has a total volume of approximately 172,200 acre-feet with a usable volume of some 142,560 acre-feet between elevation 430 and elevation 400 feet. Normally the pond fluctuates about 2 to 2-1/2 feet on a seasonal basis for normal operation.

The main dam, built in 1928, is an earth-filled structure with a concrete core wall. It is 952 feet long with a 100-foot maximum height from bedrock to the crest elevation of 442 feet. The dike forming the canal is an extension of the main dam and is of similar design. The canal is 3190 feet long with a width at crest varying from 260 feet to 320 feet. At its head end is a circular intake tower with trash rack facilities and a circular concrete conduit extending through the dike. A 943 foot long wood-stave penstock leads from a steel transition section at the end of the concrete conduit to a 76 foot high, 28 foot diameter steel differential surge tank. From here a 670 foot long steel penstock varying in diameter from 13 feet to 11 feet continues down the hill to the river's edge powerhouse.

Four auxiliary dikes complete the containment of the upper reservoir, the North Lanesville Dike in the town of New Milford, the Middle Lanesville Dike in New Milford, the South Lanesville Dike in New Milford, and the Danbury Dike in Danbury.

The brick and steel powerhouse rests on a concrete foundation and houses a vertical shaft Francis reaction-type turbine connected to a vertical water-wheel-type generator. The two 8100 horsepower pumps with a total discharge capacity of 500 cubic feet per second when rotated as generators in conjunction with the conventional generator provide a station output of some 32,000 kilowatts. The average annual generated energy output of the project is 11,161 megawatthours while the annual pumping input requirements have averaged 8,632 megawatthours. The pumps, as generators, are each rated at 3500 kilowatts at a discharge of 230 cubic feet per second. The total plant discharge at 32,000 kilowatts has been calculated to be 2075 cubic feet per second.

The Rocky River project was constructed prior to August 26, 1935. Planning began as early as 1907 and continued until 1926 when preliminary construction was initiated. Construction was completed in January, 1928 and the first generation was accomplished in October of that year. The original cost of the project as of November 30, 1966 was approximately $7,000,000, as shown in Exhibits N and Q of the application.

The Rocky River project generates power by letting water down from Lake Candlewood and its primary function is to provide spinning reserve for the system. Under normal conditions, operation of the Project is on either an "economy" or "capacity" basis. In economy operation, the pumps will be operated when there is excess water in the Housatonic River, provided hydro or economical steam capacity is available and there is sufficient room in the reservoir to store the water. This pumping is considered to be on a seasonal basis. When there is no excess flow in the Housatonic River, pump-generation on a day-night and weekly basis is sometimes economically justified when the off-peak cost of pumping by the more efficient steam units is at least equal to the cost of peak power that Rocky River generation will replace. Capacity operation is primarily for forced outages, overhauls and seasonal peak-loads during the winter months. For the winter peak-loads, drawdown usually begins in December and

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continues through the following February, after which seasonal spring pumping is begun in order to have the reservoir full by June 1. This schedule avoids any substantial drawdown of Lake Candlewood during summer months and thereby maximizes the recreational use of the Lake.

The Shepaug project is located on the Housatonic River, approximately 30 miles upstream of the river's mouth and approximately 14 miles south of the Rocky River powerhouse, in the towns of Newtown and Southbury in the State of Connecticut. It is a run-of-river hydroelectric development consisting of a reservoir impounded behind a dam across the river and a powerhouse built integrally with the dam. The reservoir, called Lake Lillinonah, is thirteen miles long with a shoreline of 35 miles, a surface area at full pond of 1870 acres, and a drainage area of 1391 square miles. The normal operating drawdown is three feet, equivalent to a volume of 5400 acre feet. The reservoir has a total usable volume of 74,000 acre-feet. At the north of the reservoir is Robertson Bleachery Dam. Just south of this dam is a constriction in the river known as Lover's Leap Gorge.

The concrete gravity type Shepaug dam was completed in 1955 and is about 1412 feet long with a maximum height of 147 feet from bedrock to the roadway along the top of the dam. It is situated at the upper end of the reservoir created by the Stevenson project dam 10.7 miles downstream. River discharges by the project are controlled by the two stanchion flashboard bays, the five taintor gates and the turbines.

When river flows exceed the 7000 cfs turbine capacity with reservoir elevation at 198.6 or higher, Taintor gates are operated to control the level of the reservoir so that no effect on the natural level of waters in the Housatonic River above the upper extremity of the reservoir can be attributed to the Shepaug project. At levels of flow between 26,000 to 28,000 cfs, the Shepaug reservoir will have been gradually drawn down, by schedule, to elevation 186 in anticipation of higher flows. At this elevation, Taintor gates, stanchion bays and turbine can pass up to 44,500 cfs. With flows greater than 28,000 cfs the reservoir level can be raised slowly, by schedule, with no effect on the higher natural levels in the river at the upper end of the reservoir.

The powerhouse substructure as an integral part of the dam, is basically of reinforced concrete. The 25 foot diameter steel penstock is 77 feet long. It connects the reservoir to a vertical shaft, Kaplan adjustable blade, propeller type turbine directly connected to a generator. The plant output is 47,000 kilowatts. The turbine at the net head of 96 feet is rated at 57,000 horsepower with a discharge of 5650 cubic feet per second. The plant has an average annual energy output of 97,735 megawatthours.

As stated in Application for License for this project, Electric Power, Inc., a wholly owned subsidiary of CL&P, filed a Declaration of Intention to construct the Shepaug project on the Housatonic River on June 2, 1952. That Declaration, included in the application

as Exhibit S-1, contained information regarding the project, the Housatonic River, and existing hydroelectric projects on the River, and stated that the purpose of the Shepaug Project was to generate and sell electric power to CL&P for distribution to customers.

After the Federal Power Commission's Findings dated December 22, 1952 in Docket No. E-6437 (11F.P.C.1548), which determined that the "interests of interstate or foreign commerce" would not be affected by the construction and operation of the Shepaug Project and that no license would be required for it, construction was begun in March 1953 and the project was completed in October 1955 at a total cost of approximately $17,000,000. In December 1954, prior to commencing operation, the Shepaug Project was transferred to CL&P. The project was constructed in accordance with the plans filed with the Declaration of Intention. Since its completion the physical features and the operation of the Shepaug Project have not changed in any significant manner.

The Stevenson project is located on the Housatonic River, approximately 19 miles upstream of the river's mouth and about 11 miles south of the Shepaug project, in the towns of Oxford, Monroe, Newtown, and Southbury in the State of Connecticut. The dam, about seven miles upstream of the towns of Derby and Shelton, impounds the waters of the project reservoir known as Lake Zoar. It is a run-of-river hydroelectric development with the water directed through the short concrete penstocks integral with the dam and powerhouse. Turbine discharge is direct to the Housatonic River at the powerhouse tailrace.

Lake Zoar has a surface area of about 1063 acres and a shore length of 27 miles with the pond at the normal USGS elevation of 100.3 feet. It has an average width of some 850 feet, a maximum width of about 2000 feet and is approximately 10 miles in length, extending to the tailwater of the Shepaug project. It contains a total volume of 26,900 acre-feet with a usable volume of 5038 acre-feet at the five-foot drawdown. The net drainage area at the Stevenson Dam is 1502 square miles.

The dam is a concrete gravity structure founded on bedrock except for 68 feet at the south end. It is 1250 feet long, with 520 feet of ungated overflow spillway, 96 feet of gated overflow spillway, and 634 feet of nonoverflow. It supports, via a bridge type construction, the roadway of Connecticut State Highway Route 34 which crosses the Housatonic River at this location. Five flood gate sluices are also located in the dam structure.

The powerhouse is located on the downstream side of the dam. It is of structural steel and brick founded on reinforced concrete poured integrally with the dam. The powerhouse contains four vertical, Francis-type turbines directly connected to generators. There were three units of 7500 kW each and powerhouse space, intake facilities and water passages for a fourth unit in the Stevenson Project initially. A fourth unit was installed at 8000 kW to complete the development. Total plant discharge at 66.5 feet average net head, is approximately 6120 cubic feet per second with a rated plant

output of 28.7 megawatts. The average annual energy output of the plant is 88,744 megawatthours.

Construction of the project was initiated in 1917. The first unit began operating on November 24, 1919 and began commercial operation on December 2, 1919. Construction was considered completed on March 1, 1920, and the second and third units began commercial operation in July of that year. The project was constructed so as to include the structural features necessary to permit the future installation of a fourth unit without structural modification. The original cost of the project as of February 28, 1967 was approximately $8,000,000. See Exhibits N and Q of the application.

Although the project was constructed with the inherent capability to accept a fourth unit, installation of that unit was postponed until additional generating capacity was required by the growth of system load.

The installation process for the fourth unit was initiated on June 21, 1930 when United Engineers and Constructors, Inc., was instructed by a letter from CL&P to conduct a study to determine the proper size of the fourth unit. A copy of that correspondence was attached, as was other related material described below, as Exhibit A to a CL&P explanatory letter ("the letter"), dated April 3, 1969, which was signed by W. A. Greten, Vice President, and filed with the Commission by CL&P.

United Engineers and Constructors, Inc., concluded that the capacity of the fourth unit could be larger than that of the other three units at the Stevenson project, without necessitating structural changes in the project, due to improvements in turbine manufacture. Thus, a 9000 kW fourth unit, as compared to the 7500 kW capacity of each of the other units, was recommended for installation at such time as load requirements required use of all or part of this unit as firm capacity.

In 1935, CL&P decided to proceed with installation of the fourth unit. An estimate was prepared and the Board of Directors of CL&P formally authorized the installation of the fourth unit on November 20, 1935. An extract of the minutes of that meeting was enclosed with the letter as Exhibit B. Purchase orders for the turbine and generator were placed on December 23, 1935. Copies were enclosed with the letter as Exhibits C and D. Actual construction on the fourth unit began in January, 1936 and the 8000 kW unit was put into regular service on August 27, 1936 despite an interruption caused by the severe flood of March 12, 1936. The installation required no substantial alterations in the dam or powerhouse. Minor modification of the top of the draft tube was required together with the installation of a new draft tube liner, the removal of old cribbing from the tailrace and dredging of the tailrace, rearrangement of the washroom facilities in the power plant and installation of transformer and switching equipment for the new generator.

CL&P and the consulting engineers regarded installation of the

fourth unit as a project which was planned in 1917 and activated in 1930, as noted from the July 10, 1936 bill from United Engineers and Constructors, Inc., to CL&P for studies on the fourth unit commencing in June of 1930. A copy was enclosed with the letter as Exhibit E.

The Housatonic River is tidal up to Mile 13.5, the site of the Shelton Dam, which was constructed in 1867-70 pursuant to authorization by the State of Connecticut. A federal navigation improvement has provided a seven-foot channel, from the mouth of the Housatonic to the Shelton upper wharves at Mile 12.4. A canal with its lower locks at Mile 13.2 provides passage for craft up to three feet in draft around the Shelton Dam. The pool behind the Shelton Dam extends approximately five miles upstream to Otter Rock (Mile 18.5) and serves as a recreational area for small craft pleasure boating. See Exhibit S-6 of the Shepaug application.

Q. Mr. Ferreira, all of these projects with the exception of Shepaug were constructed before 1935. Are you familiar with the work performed at these projects since August 26, 1935?

A. I asked the Hydraulic Section of our Generation Civil Engineering Branch to review the records and have discussions with the station and accounting department personnel relative to the work done at the Bulls Bridge, Rocky River and Stevenson projects since August 26, 1935. I have discussed and reviewed the results of the Hydraulic Section's work.

Q. What were the results of these discussions and reviews?

A. I have had prepared three exhibits, labelled Exhibits F-1 through F-3 for identification, one for each of the projects constructed prior to 1935, summarizing in tabular form the significant work performed since August 26, 1935 at each of the projects.

Q. Would you please describe and comment on the information shown in these exhibits?

A. Yes, I will. The first column of each exhibit shows the year in which the work was completed. The second column gives an abbreviated description of the work performed. The third column notes the net effect on the capacity of the station as reported, if any. The last column notes the information that was readily available regarding the installed or construction cost of the work. In reporting the work performed at the projects only that work other than routine maintenance work, such as guniting repairs to spalled concrete structures, refurbishments to canal embankments, repair of broken trash rack sections, repair of burned out electrical motors, switches, and the like, was enumerated.

Q. Starting with Exhibit F-1, entitled "Work Performed After August 26, 1935 at the Stevenson Project," would you please comment specifically on the items shown?

A. With respect to the first item, the completion of the installation

of the fourth unit at Stevenson, it should be noted that the structural features necessary for this fourth unit had been planned, designed, and constructed prior to August 26, 1935 so as to allow the installation without major structural change. Full-load operation of the plant with four units instead of three units did not and does not materially affect the flow pattern in the Housatonic River. At the average net head of 66.5 feet, the gross plant generating capability increased from 21,000 kW to 28,800 kW, plant turbine discharge increased from approximately 4,500 cfs to 6,120 cfs, and normal tailwater level increased from elevation 33.6 feet to elevation 34.6 feet. The addition of the fourth unit permitted plant utilization of river flows over 4,500 cfs and up to 6,120 cfs, instead of wasting this flow by spilling as was previously necessary. At river flows below turbine capacity of the original three units, the plant could operate less hours per day with all four units running. At river flows greater than the plant turbine capacity there was no change in flow conditions. The addition of the fourth unit increased annual generation by approximately 10%. While the original cost of the project as of 1967 was approximately $8,000,000, the installation costs of this fourth unit was only $287,000, clearly highlighting the originally planned and preconstructed structural allowances. The records indicate that planning for this unit actually began well before 1935 and the work, although completed in 1936, was the continuance of pre-1935 studies and preplanned construction.

A review of Exhibit F-1 indicates that none of the remaining post-August 26, 1935 work at the Stevenson project had any effect upon station capacity or energy output. The only other item of significant cost was the installation of two taintor gates in 1958. After the experienced hurricane flood of 1955, it was judged that the discharge capability of the dam should be increased, in the interest of improving project safety, and without regard to project kilowatt capacity or energy output. None of the work performed at the Stevenson project since August 26, 1935 affects impoundment capacity.

Q. Would you please comment upon Exhibit F-2?

A. Exhibit F-2 shows work performed at the pumped storage development, Rocky River, since August 26, 1935. None of the betterment type works described had any effect on the output of the station with the exception of the pump modifications performed in 1952. By minor revisions to the two pumps, it was possible to utilize them as turbines and to utilize the connected motors as generators, thereby increasing the effectiveness of the project. In 1952 it became desirable to take advantage of the inherent capability for conversion for limited short-term peaking capacity purposes. The approximate $15,000 minor expenditure for this work emphasizes the motors and pumps had the deliberate, inherent capability for this conversion. The motors were capable of being readily converted to generators and the inherent design of the pumps allowed relatively efficient conversion to use as turbines. The station output has been increased by approximately 7 megawatts.

Other work carried on at the Rocky River facility since 1935 and shown on Exhibit F-2 includes replacement of the deteriorated wood-stave section of the penstock with new wood sections. This was a replacement in kind and represented normal interim replacement for continued up-to-date project effectiveness. Finally, continual reinforcement of the hydroelectric station's ability to come on-the-line as quickly as possible was carried forward by replacing the original butterfly valves with new faster acting gate valves in 1970. None of the work at the Rocky River facility increased its impoundment capacity, nor did the cost of any post-August 26, 1935 work represent more than a minor increment over the original project cost of approximately $7,000,000.

Q. Would you please discuss Exhibit F-3?

A. Exhibit F-3, tabulating items of post-August 26, 1935 work at the Bulls Bridge project, shows that while numerous items were involved, none affected station capacity or output, increased its impoundment capacity or added significantly to the original total project cost. The type of work done can be categorized as routine updating of project structures and works, routine maintenance and interim replacement work, and installation of safety and operating efficiency related items.

Q. Mr. Ferreira, in your opinion and based upon your familiarity with the Bulls Bridge, Rocky River and Stevenson projects, has any of the work performed since August 26, 1935 at any of the projects changed their essential identity or design characteristics?

A. No. All post-1935 work could be characterized either as routine maintenance, updating and equipment replacements, or, in the case of the Rocky River and Stevenson projects, addition of project capacity which had been planned for prior to August 26, 1935. No increased storage capacity resulted from any of the post-1935 work.

Q. Since December 22, 1952 have the physical features or the operation of any of the projects or the essential physical features of the river (except for the construction of the Shepaug project) changed in any significant way?

A. No, there have been no such changes. I would like to note that the plants continue to operate today as hydroelectric peaking plants essentially in the same way as they have been operated since their construction.

Q. In your opinion, does the actual operation of the four projects which are the subject of this proceeding affect in any significant manner the actual navigability of the lower Housatonic River, below the Derby dam, located approximately 6 miles south of the Stevenson project?

A. No. As a practical matter, operation of these four projects has no effect on water levels or flows in the downstream, navigible portion of the Housatonic River in a manner which could affect use of the river by commercial or even pleasure craft.

F.P.C. PNR-LP
Project Nos. 2576, 2604, 2632
and 2646

Ferreira -- Direct 99

AFFIDAVIT

STATE OF CONNECTICUT

Hartford, ss:

Antonio Ferreira, being duly sworn, deposes and says: that he has read the foregoing questions and answers labeled as his testimony in this proceeding, and if asked the questions therein his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge and belief.

Antonio Ferreira
Antonio Ferreira

Subscribed and sworn to before me
this 17th day of October 1974.

William H. Cuddy
Notary Public

My Commission expires: March 31, 1975

REBUTTAL TESTIMONY OF ANTONIO FERREIRA IN THE
MATTER OF THE CONNECTICUT LIGHT
AND POWER COMPANY, PWR-LP
PROJECT NOS. 2576, 2604, 2632, and 2646

Q. Are you the same Antonio Ferreira whose direct testimony was previously filed in this proceeding?

A. Yes, I am.

Q. Mr. Ferreira, have you reviewed the direct testimony of Mr. Daniel Abramowitz of the Federal Power Commission staff?

A. Yes, I have.

Q. Would you comment upon his description of actual usage of the River below the Derby dam and of Lake Housatonic by boats?

A. Yes. I noted that in his observations of usage of the tidal portion of the River he indicated that craft were observed up to Shelton, presumably where the Shelton wharves are located at the head of the federal navigation project. He did not indicate that any usage of the River had been observed from the end of the Shelton wharves to the Derby Dam, or the last mile of tidal water.

His observations of usage of Lake Housatonic indicate that only pleasure boats could be seen except for the Yale crew boats, with no commercial boats. He observed no marinas or other commercial facilities for servicing boats, and the farthest point of upstream usage observed was 1/2 mile below Otter Rock, by the Yale crew. Our own records indicate that an average of only eight boat passages per year occur at the Shelton Canal Company's Lower Locks, with no passages during the past two years, verifying the extremely limited use of Lake Housatonic.

Q. Mr. Abramowitz indicated in his testimony that the projects upstream of the Stevenson project could have a pronounced effect upon the levels of water in Lake Housatonic and in the tidal portion of the river, below the Derby dam, during the low flow periods of the year, both singly and if contributions from those projects were "super-added" to discharges from the Stevenson project. Would you please comment on his statements.

A. Two of the upstream projects, Bulls Bridge and Shepaug, are conventional run-of-river hydroelectric stations. During low flow periods of the year, from July through October, the river flow is often less than their capacity. These stations derive their most economic benefit to the Northeast System by ponding the low inflows that enter their ponds and then discharging the ponded water through their turbines during the peak hours of the day to the extent that such inflows provide water. The operation of these stations is thus limited by the amount of inflows, and downstream stations are sequentially effected by the same inflows. In other words, the

amount of water discharged from an upstream station (plus contributions from the intervening watershed) is essentially equal to the discharge of the next downstream station. Each is attempting to draw from its own storage only that amount of water that is forecast to inflow onto its ponds. This means that in the normal operation of these stations, during the dry season, their discharges end up in Lake Lillinonah and Lake Zoar, respectively, and do not show up as added discharges from downstream stations. This fact can perhaps be more easily understood by pointing out that a downstream run-of-river station such as Shepaug or Stevenson is essentially operated as though the upstream stations did not exist, since inflows into the lowest pond is ultimately dependent upon actual river inflows.

Q. What can you conclude about the effect of Bulls Bridge and Shepaug stations, then, upon Lake Housatonic and the tidal portion of the River?

A. During the dry period of the year the turbine discharges from the Bulls Bridge and Shepaug projects never reach the lower 18.5 mile section of the river in the form of increased flow resulting from cumulating with flows from the other projects. Instead they are used for storage within the ponds behind the Shepaug and Stevenson dams and therefore have no additional effect upon the depths of the lower 18.5 mile section of the Housatonic River, including both Lake Housatonic and the tidal portion below the Derby dam.

Q. Would you comment on the effect of the Rocky River operation on the depths in the lowest 18.5 miles of the Housatonic River?

A. Mr. Abramowitz states in his testimony that the Rocky River Project could have a pronounced effect on the navigable depths in the lowest 18.5 miles of the Housatonic River, particularly if the project were to discharge at approximately 2,000 cfs for a period of several days during the low flow season. Actually, if the project were to operate in such a manner, the storage reservoir of the project, Lake Candlewood, would be drawn down several feet. This rather rapid drawdown would have a severe impact upon the recreational use of Lake Candlewood. In fact the project's operating instructions limit the drawdown of the Lake from the period midnight, May 31, to midnight, September 30, specifically to prevent there being any such impact on the recreational use of this Lake. Another reason why the pond is not drawn down heavily during the low flow season is because there is insufficient natural flow in the Housatonic River during this period of the year from which the Rocky River project could pump for purposes of refilling the large hole that would be produced in Lake Candlewood. You will recall that this is a seasonal pumped storage project, the upper storage reservoir being refilled normally during the spring freshet period. The normal or typical operation of this project is that during the low water period of the year, July through October, the average daily use of the Rocky River project is approximately 24 megawatt hours per day. Based on the respective efficiencies of the Rocky River and Stevenson plants, the volume of water discharged from Rocky River would produce approximately 7 megawatt hours of

operation at Stevenson. This additional water availability at Stevenson means that the Stevenson station is able to operate for about 15 additional minutes at full capacity (7 megawatt hours ÷ 28.7 megawatts = 1/4 hour). This additional discharge from Stevenson cannot, in my opinion, significantly affect the water levels in Lake Housatonic or the tidal portion of the River below the Derby Dam.

It is therefore clear that Mr. Abramowitz's conclusions are not correct as to the pronounced effect on the water levels in Lake Housatonic or the tidal portion of the River below the Derby Dam. This is especially true based upon the normal operation just described wherein the levels of Lake Candlewood are normally maintained as high as reasonably possible during the low flow season.

Q. Can the discharges from the three upstream projects be "super-added" to those from Stevenson and thereafter impact on levels in Lake Housatonic?

A. In theory this could occur from time to time as a result of deliberate timing, but not daily. However, because of the distances between these projects and the amount of time it takes for discharges from one project to reach the downstream facilities, super-adding discharges would require critical, staggered timing of each of the four projects. This would require three out of these four projects to change from their normal daily peak period operation, at an economic loss. Thus, these facilities are not presently operated so as to super-add their discharges, and the Northeast Utilities System has an economic incentive <u>not</u> to operate these facilities in such a matter.

Q. Could you now describe how the Stevenson project effects levels in Lake Housatonic and in the tidal portions of the River?

A. Yes. I have already indicated that the three upstream projects do not significantly affect these levels. Stevenson does, however, discharge directly into Lake Housatonic during its operation. The Stevenson project is a conventional run-of-river hydroelectric project like Bulls Bridge and Shepaug, and during the dry season is operated in a similar manner to those projects.

I have examined Mr. Abramowitz's Exhibit DEA-2, which is a rating curve of the U.S.G.S. gauging station located at mile 19.2 on the River. While I do not dispute the data shown on that Exhibit, I do question its significance. The Stevenson project normally discharges at full capacity less than three hours per day during the low flow period of the year, thus greatly limiting the effect shown on Exhibit DEA-2. Of greater importance, however, is that the gauging station is located approximately 7/10 of a mile <u>upstream</u> from Otter Rock, which is the furthest point at which even the Federal Power Commission has claimed the Lake to be navigable, and is 1.2 miles upstream of the farthest point north observed by Mr. Abramowitz to actively be used by boats. Perhaps a more meaningful location to measure the brief effect of full discharge from the Stevenson project would be at the Derby dam itself, where the level of Lake

during the dry period, the flow over the Derby Dam during these months never reaches that discharge rate. This would indicate that Mr. Abramowitz's hypothetical case as set forth in his testimony and in Exhibit DEA-6 has no foundation in reality. The conclusions which I reached in my direct testimony that these four projects have no practical or significant effect upon boat navigation in either Lake Housatonic or the tidal portion of the Housatonic River still stand.

Q. With respect to Mr. Abramowitz's remarks concerning the work done at the projects since 1935, do you have any specific comments?

A. Mr. Abramowitz agrees in his testimony that provision had been made during the original construction of the Stevenson project for the subsequent completion of the project by providing a blanked-off penstock stub for the fourth unit, and that in the case of Rocky River the work after 1935 consisted merely of rewiring of the motors so that they could also be utilized as generator. Thus, Mr. Abramowitz testimony confirms my own factual statements regarding post-1935 work, and it is my belief that any analysis of the facts compel a conclusion that the projects were not significantly changed from their essential pre-1935 character.

I would also note before concluding that on page 13, line 23 of his testimony, Mr. Abramowitz indicates that the Rocky River motors were "rewound". I believe that this was an inadvertent error since elsewhere in his testimony he recognizes that the motors were only rewired.

F.P.C. PWR-LP
Project Nos. 2576, 2604, 2632
and 2646

Ferreira -- Direct 106

AFFIDAVIT

STATE OF CONNECTICUT

HARTFORD, ss:

Antonio Ferreira, being duly sworn, deposes and says: that he has read the foregoing questions and answers labeled as his rebuttal testimony in this proceeding, and if asked the questions therein his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge and belief.

Antonio Ferreira
Antonio Ferreira

Subscribed and sworn to before me
this 8th day of November 1974.

Notary Public

My Commission expires: March 31, 1976

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BY MR. McINTOSH:

Q. I now direct your attention to the documents identified as Exhibit F-1 in your prepared testimony, a document of one sheet, identified as "Work Performed After August 26, 1935, Stephenson Project, FPC Project No. 2646, Connecticut Light and Power Company" consisting of a 1-page tabular presentation.

Did you supervise the preparation of or prepare yourself this exhibit?

PRESIDING JUDGE: What was that date, please?

MR. McINTOSH: August 26, 1935.

PRESIDING JUDGE: You may answer the question.

THE WITNESS: Yes. These exhibits were prepared under my direction.

BY MR. McINTOSH:

Q. Specifically, the exhibit identified as "F-1"?

A. Yes.

Q. All right.

MR. McINTOSH: Your Honor, I ask that that exhibit be identified as Exhibit No. 6.

PRESIDING JUDGE: Will there be any objection?

(No response)

It is received in evidence as Exhibit No. 6.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 6 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

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BY MR. McINTOSH:

Q. I direct attention to the exhibit identified as F-2 in your prepared testimony, a single sheet, "Work Performed at August 25, 1935, Rocky River Project, FPC Project No. 2632 of Connecticut Light and Power Company." Did you prepare that exhibit or supervise its preparation?

A. This exhibit was prepared under my direction.

MR. McINTOSH: I ask that that be idenfified as Exhibit 7 for identification.

PRESIDING JUDGE: Any objection?

(No response)

Received in evidence as Exhibit 7.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 7 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

BY MR. McINTOSH:

Q. I refer you to Exhibit F-3, consisting of 2 sheets, "Work Performed After August 26, 1936, Bull's Bridge Project, FPC Project 2604, Connecticut Light and Power Company," and ask you whether you prepared that exhibit or whether the exhibit was prepared under your supervision?

A. It was prepared under my direction.

MR. McINTOSH: I ask that that be marked for identification as Exhibit 8.

PRESIDING JUDGE: Is there any objection?

(No response)

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PRESIDING JUDGE: Received in evidence as Exhibit 8.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 8 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

BY MR. McINTOSH:

Q. I direct attention to Exhibit F-4, identified in your prepared rebuttal testimony as a single-page exhibit entitled "Time Required for Full Stephenson Generation Discharge (6083 cfs) Over the Derby Dam." Did you prepare that exhibit or was it prepared under your supervision?

A. This exhibit was prepared under my direction.

MR. McINTOSH: I ask that that be identified as Exhibit 9, Your Honor.

PRESIDING JUDGE: Is there any objection?

(No response)

It is received in evidence as Exhibit 9.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 9 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

BY MR. McINTOSH:

Q. I direct attention to Exhibit F-5 as identified in your prepared rebuttal testimony consisting of 5 sheets entitled "Summary of Coincident Periods of 6056 cfs Discharge Over Derby Dam with Mean Low Tide June through September, 1974." I ask you whether this exhibit was prepared by you or prepared subject to your direction?

A. This exhibit was prepared under my direction.

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MR. McINTOSH: I ask that that be marked as Exhibit No. 10 for identification, Your Honor.

PRESIDING JUDGE: Is there any objection?

(No response)

It is received in evidence as Exhibit 10.

(THE DOCUMENT REFERRED TO WAS MARKED EXHIBIT NO. 10 FOR IDENTIFICATION AND RECEIVED IN EVIDENCE.)

MR. McINTOSH: Your Honor, I believe that completes the receipt in evidence of Mr. Ferreira's prepared direct testimony and prepared rebuttal testimony, and his exhibits, unless Mr. Ferreira has changes or corrections to the exhibits.

THE WITNESS: There are no changes.

PRESIDING JUDGE: You may step down, subject to recall for cross-examination.

(Witness temporarily excused.)

MR. McINTOSH: I would like, Your Honor, to call at this time, Mr. Lyle M. Thorpe.

Whereupon,

LYLE M. THORPE

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. McINTOSH:

Q I show you 4 pages of prepared testimony and ask you whether this testimony was prepared by you for submission in

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this proceeding.

A. It was.

Q. If you were asked the questions contained in this prepared testimony. Mr. Thorpe, would you give the answers therein set forth?

A. I would.

Q. Are those answers true and accurate to the best of your knowledge and belief?

A. They are.

Q. Are there any changes or corrections you wish to make in your prepared testimony?

A. Yes. There are two.

On page 2, line 37, I would like a "period" after the parenthetical "Mile 1.35," and delete the remainder of that sentence.

For clarity on page 4, line 34, after the word "assume" I would like inserted "the masts" and delete the word "they."

PRESIDING JUDGE: That is, "the masts"?

THE WITNESS: Yes, sir.

BY MR. McINTOSH:

Q. Do you have any other corrections or changes that you wish to make in your prepared testimony?

A. None.

MR. McINTOSH: I request that the prepared testimony of Mr. Thorpe, consisting of 4 pages and the accompanying

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Affidavit, be copied into the record of this proceeding.

PRESIDING JUDGE: So ordered.

(The Prepared Testimony of Lyle M. Thorpe, follows:)

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

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TESTIMONY OF LYLE M. THORPE IN THE MATTER OF THE CONNECTICUT LIGHT & POWER COMPANY, PWR-LP PROJECT NOS. 2576, 2604, 2632 and 2646.

Q. Please state for us your name, occupation and business address.

A. My name is Lyle M. Thorpe; I am a fish and wildlife consultant and my business address is Anderson Road, Tolland, Connecticut.

Q. Mr. Thorpe, please state your educational background and your experience with the physical characteristics of rivers.

A. I received my Bachelor of Science degree from Cornell University, Ithaca, New York in 1935. At Cornell I majored in aquatic biology. I spent close to thirty years with the Connecticut State Board of Fisheries and Game in various positions. From 1935 to 1947 I was an Aquatic Biologist with the Board; from 1947 to 1950 I was the Supervisor of Fisheries Management; from 1950 to 1954 I was Chief of the Fisheries Division; and for the ten years from 1954 to 1964 I served as Director of the Board.

Since that time I have acted in a consulting capacity for the United Illuminating Company, the Connecticut Light and Power Company, the Western Massachusetts Electric Company, the Hartford Electric Light Company, the Holyoke Water Power Company and Charles T. Main & Associates, Boston, Massachusetts.

Q. Mr. Thorpe, please state the basis for your familiarity with the Housatonic River.

A. The years which I spent with the Connecticut State Board of Fisheries and Game offered me numerous opportunities to acquaint myself with the physical characteristics of the Housatonic River, one of the major streams in the State of Connecticut. Though I primarily concentrated on the aspects of the River pertaining to fish habitat, I certainly considered those characteristics of the River which would make it conducive for other uses.

Q. Mr. Thorpe, could you describe for us in a general manner the physical characteristics of the Housatonic River?

A. The total fall of the Housatonic River in Connecticut is approximately 645 feet. A large percentage of the fall in Connecticut has been developed for water power.

The Housatonic assumes identity near Pittsfield, Massachusetts. It meanders southerly, then westerly past Stockbridge and Glendale and then turns through Housatonic, Lenox, Lee, Great Barrington, Sheffield and into Connecticut where it separates the towns of Canaan and Salisbury. The gradient, or slope, in this reach averages only about 2 feet per mile and in many places is no more than half that. Thus, the River flows sluggishly between banks cut steeply into the fine alluvial silt, around many sharp bends where usually there are lodged the remains of large trees toppled and carried away by past freshets.

The River undergoes a conspicuous change in physical characteristics as it tumbles over Great Falls, in Canaan, Connecticut (Mile 76): Steep gradients occur at Falls Village (Mile 76), with a fall of 99 feet in three-tenths of a mile; and between West Cornwall Bridge (Mile 69.9) and Swifts Bridge (Mile 64.5), where the River falls about 90 feet in less than two miles. From Bulls Bridge (Mile 51) the River falls 246 feet in 37.5 miles to tidewater, an average slope of about 6.6 feet per mile. In the natural state of the River in Connecticut, in addition to the large natural falls at Falls Village (Mile 76) there were rapids at Shelton (Mile 13.5), Stevenson (Miles 19-20), Lovers Leap (Miles 38-40), and other points between Bulls Bridge (Mile 52) and Shelton (Mile 13.5), and a small natural dam at Still River (Mile 40.8).

Below Great Falls, the valley is narrower and the gradient of the stream bed is much steeper. The channel, widened by freshets rushing down the steeper gradient, is armoured with coarse gravel, boulders and rubble. In spate, the River is a millrace of troubled water; in summer, it is a series of shallow riffles interspersed with pools of varying length and depth. Occasionally a cliff turns the River abruptly to an

easier path, as at West Cornwall (Mile 70); or a hard ledge sill holds back a long stillwater; or the River is squeezed through a vertical crack in a rock wall, as at Lovers Leap in New Milford (Miles 38-40). But the general character of long, shallow riffles and quiet pools prevails from Falls Village, in Connecticut, below the Great Falls, to Shelton (Mile 13.5) except at Bulls Bridge (Mile 51) where there is a falls and gorge somewhat similar but smaller than the Great Falls area. Because of the pool-rapid nature of the channel, loss of elevation is accomplished in a series of steps. In these steps the gradient is often quite steep and the flow over hard bouldery bottom is rapid.

Q. Mr. Thorpe, in drawing upon your experience with the River, is it your opinion that the River in its original, unimpounded state, was ever capable of being used for transportation by boats or craft of any kind?

A. Although much of the original character of the River channel has now been concealed by the impoundment of its waters, the unimpounded sections, taken in connection with gradient, valley width and soil types, make it possible to visualize the former character of the impounded sections with considerable accuracy.

The physical characteristics of the channel and the fast runoff pattern of the watershed make it unlikely that the Housatonic River in Connecticut was used to transport people or local produce from point-to-point to any significant extent. The only reaches of any length that small craft could have negotiated in relative safety are in the flat valley above Falls Village. Even here, the tortuous River course with many tree trunks jammed on the sharp bends would have made River travel much slower than travel by horse or by foot. From the Great Falls at Falls Village to Shelton small boats would have had to portage at several points even during that brief period during the decline of the spring runoff when downstream passage of small boats and canoes is possible. During most of the year there is simply not enough water, to float even small boats or canoes over the shallow bouldery riffles between pools. Even at best then, transport of people between the Great Falls and tidewater would have been possible for only a brief time downstream, and with several portages. I am

unaware of any such uses of the river during recent years, and I believe Dr. Collier's testimony in this proceeding confirms my expectations as to the likelihood of its use in earlier times.

Q. Mr. Thorpe, is it your opinion that the Housatonic River was or ever could have been used to transport logs to or from lumbering operations?

A. That the River was ever or could ever have been used for log drives is highly unlikely. Again, the physical characteristics of the River itself are the most persuasive evidence against the Housatonic ever having been an important means of transporting timber. The only time that logs could have been floated would probably have been during the spring freshet. However, logs going downstream at that time would most likely have been stranded on the flood plain in places, jammed on the bends in others and, in general, scattered the length of the River between Falls Village and Shelton.

Q. Mr. Thorpe is it your opinion that the Housatonic could ever have supported the floatation of "mast" trees to southerly points?

A. I have mentioned that the River's condition made it unusable for the floatation of saw logs or pulp wood; the existence of a "masting" trade would be even more unlikely. I believe that the King's Mast Trees were tall, straight trees, suitable for rigging Ships of the Line. The topsails on many of these major men-of-war stood some 60 to 70 feet above the main deck and we must assume they were stepped at least 25' to, or near, the keel. Thus, these timbers had to be at least 80 feet long. Working such timber through the rapids, gorges and bends in the Housatonic to the tidewater would have been an almost impossible task. In addition, the timbers probably would have been cut and abraded by the sharp rocks and therefore rendered unusable for the intended purpose of masting.

Q. In summary, Mr. Thorpe, is it your opinion that the Housatonic was or could ever have been used for navigation or logging purposes?

A. In my opinion, the Housatonic was never suitable for commercial navigation by boat or transport of timber.

F.P.C. PWR-LP
Project Nos. 2576, 2604, 2632
and 2646

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AFFIDAVIT

STATE OF CONNECTICUT

Hartford, ss:

Lyle M. Thorpe, being duly sworn, deposes and says: that he has read the foregoing questions and answers labeled as his testimony in this proceeding, and if asked the questions therein his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge and belief.

Lyle M. Thorpe

Subscribed and sworn to before me
this 17th day of October 1974.

Notary Public

My Commission expires: April 1, 1977

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of thorpe

MR. McINTOSH: You have no exhibits to offer in this proceeding, is that correct, Mr. Thorpe?

THE WITNESS: That is correct.

PRESIDING JUDGE: You are excused, subject to recall for cross-examination.

(Witness temporarily excused)

MR. McINTOSH: Your Honor, I would like to call as a witness Christopher Collier.

Whereupon,

CHRISTOPHER COLLIER

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. McINTOSH:

Q Mr. Collier, you are both a Professor and the holder of a Doctorate. Do you prefer to be called "Professor" or "Doctor"?

A. Professor.

Q. Thank you.

I show you 13 pages of prepared testimony, Professor, and ask whether that was prepared by you as direct testimony in this proceeding?

A. It was.

Q. I show you 9 pages of prepared rebuttal testimony and ask whether that was prepared by you as your testimony in this

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proceeding?

A. It was.

Q. Professor Collier, if you were asked the questions contained in this prepared direct, and rebuttal testimony, would you give the answers set forth therein?

A. Yes.

Q. Are those answers true and accurate to the best of your knowledge and belief?

A. Yes.

Q. Are there any changes you would like to make in your prepared testimony, Professor Collier?

A. Yes, sir. I have two minor corrections in my direct testimony.

On page 3, line 13, "The senior reference librarian" should read "A senior reference librarian."

On page 5, line 46, "John C. Herbst" should be identified as "Professor of Geography at Central Connecticut State College and author of a Doctoral dissertation on the historical geography of the Naugatuck River Valley."

Third correction: Page 9, line 16 and line 17, the attribution there that now reads "A History of Berkshire County, Massachusetts (1829)" should be deleted and replaced by: "The Economic Revolution in late Eighteenth Century Connecticut (1964.)"

PRESIDING JUDGE: Is that the title of a work?

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THE WITNESS: Yes. It is a typescript dissertation that should be in quotation marks rather than underlined.

I have two corrections to make in my rebuttal testimony.

Page 2, line 37, "Commissioner" should read "Commission."

Exhibit C-1 --

BY MR. McINTOSH:

Q We will get to your exhibits in a moment, Professor Collier.

Do yuu have any other changes or corrections to your prepared testimony?

A. This exhibit is part of that rebuttal testimony. You want to handle that later?

Q. The exhibit will be treated separately.

A. Then I have no further corrections at this itme.

MR. McINTOSH: I request that the prepared direct and rebuttal testimony of Professor Collier, consisting of 13 pages of prepared direct testimony, and 9 pages of prepared rebuttal testimony, be copied into the record of this proceeding and be admitted into evidence.

PRESIDING JUDGE: So ordered.

MR. KOSLOFF: Your Honor, I have several objections I wish to raise.

PRESIDING JUDGE: At this point?

MR. KOSLOFF: Yes, sir. They are motions to strike. They are rather lengthy. If it pleases Your Honor I can itemize

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them at this time. I think it would be appropriate at this time to hear them.

Although I couch this in the form of a motion to strike, I recognize some of my objections are technical and would go to the weight rather than to the sufficiency of the testimony just now offered in evidence.

I would like to raise those points, however.

PRESIDING JUDGE: I think it might be appropriate to do so now.

I will defer my direction to copy Professor Collier's testimony into the record until disposition of the motion to strike, which is about to be made.

MR. BENEDICT: A question, Your Honor:

Will there be opportunity to cross-examine Dr. Collier before the other side goes into evidence?

PRESIDING JUDGE: Yes, I think so.

MR. BENEDICT: Then I will wait.

MR. KOSLOFF: I direct attention first to page 3, Your Honor, referring to the direct testimony of Mr. Collier. I direct attention to lines 46 and following.

Mr. Collier there states: "For Massachusetts there is no evidence of commercial navigation on the Housatonic River by boats or vessels of any type."

I submit Mr. Collier is incompetent to testify as to the extent of commercial navigation. He has been qualified as a

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historian. However, I do not believe his qualification extends to include expertise in the area of commercial navigation or the feasibility of commercial navigation.

I also object to the context, the way the statement is made. This objection goes -- I will raise it at other points of his testimony, as well. I feel his statement that there is no evidence is incompetent, in that, with all due respect, Professor Collier has spent, I believe, 36-some-odd days in preparing his testimony, however I do not believe he even as an expert can say there is no evidence. He may say he has found no evidence.

Because of that, I feel he is incompetent to make such assertion.

I ask it be stricken.

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MR. TELLEEN: What is the extent of the direct testimony you wish stricken, may I ask? I think you said page 3, line 46. But to where does it extend?

MR. KOSLOFF: Specifically, page 3, line 46 through page 4, line 7.

I have additional objections to these statements.

On line 48, page 3, Mr. Collier says, "There are a number of 18th and 19th Century statements that the river was not navigable."

I find, first, no foundation at this point in the record for making that assertion.

Secondly, again I believe -- well, I will just say I feel it is a conclusion of the witness, without proper foundation being laid.

I find no adequate foundation laid thereafter, either, in his rebuttal.

However, continuing --

PRESIDING JUDGE: Do you have any more of the same type of objections?

MR. KOSLOFF: Yes, I have.

PRESIDING JUDGE: Then let me interrupt you. I am going to overrule your objections at this time. I think the appropriate thing to do is to wait for cross-examination. If you wish to attack the professor's qualifications you may do so on cross-examination. After you have done so

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you may make a motion to strike for whatever reason you may have.

Statements like, "There is no evidence," can also be discussed in cross-examination. You might ask him on what that is based, what sources he has examined, et cetera, et cetera. If you then feel that statement is not justified I think you can make that point for the record without necessarily striking the statements.

Does that dispose, at least for the time being, of the general run of your objections at this point?

MR. KOSLOFF: Well, I feel, Your Honor, that -- I know it is time-consuming to raise these points. However, I do not feel that I wish to direct these questions on cross-examination to Professor Collier. Professor Collier has made statements. I feel it is part of the case in chief of the applicant in this case. I do not feel that I have the burden to substantiate either the credibility of the witness or his competence. I feel that is the duty of the person who introduced his evidence.

As I say, although I couch this in the form of a motion to strike, I would have believed since the objections are technical that they should go rather to the weight than to the sufficiency of his statements.

I feel Mr. Collier has made certain definite statements.

PRESIDING JUDGE: Are you saying that on the basis of

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Professor Collier's stated qualifications he is incompetent to give the testimony that he has given?

MR. KOSLOFF: Yes, sir, in certain areas which I was attempting to get into. Yes, sir. That is exactly what I am saying.

PRESIDING JUDGE: Then you better point me in the direction of the precise failings of his qualifications.

MR. KOSLOFF: Yes, sir. Referring back to page 3, line 46 of his direct testimony, when Professor Collier says, "There is no evidence," I cannot accept that as a competent statement from any person, no matter how qualified an expert he may be. I think the best he can assert is that he has found no evidence. Therefore, I ask that the statement that, "There is no evidence," be stricken.

If Mr. McIntosh wishes to rehabilitate his witness on that statement on another basis, fine. I refer specifically to direct testimony. I feel that statement is unfounded, on the basis of his qualifications.

PRESIDING JUDGE: Would you say a statement as broad as that could ever be competently qualified?

My point is that as a Judge I can take this statement with the necessary dose of salt. I know nobody can state that there is no evidence unless he has examined everything there is to be examined. I take it what Professor Collier means by this is that he has seen no evidence. To what

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extent he has searched I will have to read his testimony to discover. Mr. McIntosh is at liberty to make additional comments after we are through.

That objection is overruled. Proceed.

MR. KOSLOFF: If that is the basis on which you take that kind of statement, yes, I would even withdraw my motion to strike on that basis, if that is what you prefer.

PRESIDING JUDGE: Very good.

MR. KOSLOFF: I repeat my objection, page 3, line 48, that, "There are a number of 18th and 19th Century statements that the river was not navigable." This is not in the record. I do not find specific reference.

PRESIDING JUDGE: Why don't you cross-examine his as to where that is in the record, what statements he has examined, what he has seen?

MR. KOSLOFF: Frankly, Your Honor, I do not feel I have a duty to rehabilitate the witness.

PRESIDING JUDGE: The witness does not have to be rehabilitated. If he says he has seen some statements and they do not contain certain material, I do not see why I should not accept his statement unless someone shows me that statement is not correct. You can show me as a cross-examiner what he has not seen or has failed to examine, and where those omissions exist.

MR. KOSLOFF: I was under the distinct impression that

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the applicant must lay a proper foundation for his presentation.

PRESIDING JUDGE: I am sorry. Your objection is overruled.

MR. KOSLOFF: As I said, my objections will go generally to the weight of his testimony, rather than to sufficiency. I would not ask you to apply hard rules of evidence as in an ordinary civil proceeding here, anyway.

Therefore, let me withdraw my objections at this time with the right to renew them after I cross-examine the witness.

PRESIDING JUDGE: Very well.

MR. BENEDICT: Is the witness qualified as a historian or also as an engineer, Your Honor?

PRESIDING JUDGE: You will have the opportunity to ask him that question.

MR. BENEDICT: I see.

MR. TELLEEN: Your Honor, you made a comment in talking with Mr. Kosloff concerning the appropriateness for any party to make appropriate motions at the end of cross-examination. I assume, of course, that right is open to all parties.

PRESIDING JUDGE: Yes.

MR. TELLEEN: Thank you.

PRESIDING JUDGE: The testimony, direct and rebuttal, of Professor Collier, will be copied into the record.

(The direct and rebuttal testimony of Christopher Collier

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is as follows:)

BEFORE THE
FEDERAL POWER COMMISSION

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Collier - Direct

TESTIMONY OF CHRISTOPHER COLLIER IN THE MATTER OF THE CONNECTICUT LIGHT & POWER COMPANY, PWR-LP PROJECT NOS. 2576, 2604, 2632, and 2646

Q. Please state your name, business address and position.

A. My name is Christopher Collier. I am a Professor of American History at the University of Bridgeport, Bridgeport, Connecticut 06602. At the University, I teach courses in American Social, Intellectual, Colonial, Revolutionary and Early National History; Historiography; Connecticut History; and American Studies (American History Through the Novel, American History Through the Film).

I have also been a visiting Professor at Fairfield University (1966), the University of Connecticut, (1970, 1971, 1972, 1973) and New York University (1974).

Q. Dr. Collier, could you summarize for us your professional qualifications?

A. I received my A.B. from Clark University, Worcester, Massachusetts in 1951. In 1955 I received a masters degree in teaching from Teachers College, Columbia University, New York, New York. Finally, I was awarded a doctorate (Ph.D.) in 1964 from Columbia University's Faculty of Political Science. The subject of my doctorial dissertation was "Roger Sherman and the Founding of a Nation, 1721 - 93." Subsequently, I have been listed in the Directory of American Scholars (5th Ed. Vol. 1.) and Contemporary Authors, Vols. 33 - 36 (1973).

I am the author of Roger Sherman's Connecticut: Yankee Politics and the American Revolution, published by the Wesleyan University Press in 1971, and a historical monograph entitled Connecticut in the Continental Congress, published by the Pequot Press in 1973. In addition, I have edited the Public Records of the State of Connecticut, Vol. XI (1802-03), and have written twelve published articles dealing with the history of Connecticut and New England in the eighteenth and early nineteenth centuries. Also forthcoming and in progress are "Town Bounds and the Revolutionary Impulse: A Study in Geography and

Ideology in Connecticut, 1772 - 1789;" "The First U.S. Census in Connecticut; A Communication;" a full-scale study of the rise of political parties and the social backgrounds of oppositionist figures in Connecticut, 1772 - 1806; and a monograph on the settlement patterns, land use, town incorporation and municipal law in Connecticut from 1634 to 1810. Finally, I have written numerous reviews for scholarly and popular journals.

In addition, I was a co-founder of the Association for the Study of Connecticut History and the founding editor of The Connecticut History Newsletter.

Q. Dr. Collier, could you explain the basis for your testimony concerning the use of the Housatonic River in the eighteenth and nineteenth centuries?

A. In preparation for offering this testimony regarding the history of the navigability of the Housatonic River, I visited the libraries and archives at the Connecticut State Library, the Connecticut Historical Society, the American Antiquarian Society, the New Haven Colony Historical Society, the Litchfield Historical Society, Sterling Memorial Library and the Forestry School Library at Yale University, the libraries of Old Mystic Seaport, Clark University, and the University of Bridgeport. In each case I surveyed the card catalogs under all relevant subject headings.

I also examined all standard general historical indexes including: Poole's Index to Periodical Literature, 1809-1906; Nineteenth Century Readers Guide to Periodical Literature, 1890-1899; Annual Magazine Subject Index, 1907-1949; Readers Guide to Periodical Literature 1900-; Social Science and Humanities Index, 1916-; Writings on American History, 1902-1961; America: History and Life, 1964-.

A number of special indexes used were those to the Collections of the Essex Institute, to the Pittsfield Sun, 1800-1905, the Connecticut State Library General Index to the Archives, the manuscript indexes at the above listed repositories, and the index of the Historical Manuscripts Room at Yale. Of course I consulted Charles A. Flagg's Reference List of Connecticut Local History (1900); Warren Kuehl's Dissertations in History (1965, 1970); and Kennard and Fisher's A Bibliography of Publications Relating to Water Resources in Connecticut, 1900-1970 (1970). I also scanned the

contents page of each issue of full runs of The Connecticut Quarterly and Magazine; Connecticut Woodlands; Forest History; Connecticut Circle; and The Lure of the Litchfield Hills.

From all of the sources, and from the bibliographies found appended to many of them, I extracted over 150 printed items relevant to the navigation of the Housatonic River prior to 1870. I read or scanned each of those items.

With the aid of my wife, Mrs. Bonnie B. Collier (M.A. in History, M.L.S. in Library Science), who is the Senior Reference Librarian at the Sterling Memorial Library of Yale University, I examined relevant sections of six eighteenth- and nineteenth-century newspapers of the upper Housatonic Valley, including every issue for the period late January to mid-May for a collective total of over fifty years, and full years of several papers for certain significant dates (1807, 1829-30).

The major manuscript sources studied were account books of shipbuilders, merchants, and lumber and sawmill operators in the Housatonic watershed area. I also read numerous petitions, bills, depositions, and surveys in the manuscript Archives at the Connecticut State Library, as well as the manuscript "Journal of the [Connecticut] House of Representatives" for relevant years, and town records for Cornwall and Derby (both towns on the Housatonic River in Connecticut) in the town clerks' offices.

Finally, I interviewed in person or on the telephone, a number of professional scholars of relevant specialty, including the three principal authorities on the historical geography of the Housatonic River Valley. I have also interviewed numerous amateur local historians, including presidents and past presidents of local historical societies.

Q. Dr. Collier, would you state for us whether in your opinion that portion of the Housatonic River which flows through Massachusetts has ever been used for commercial navigation by boats or vessels of any kind, and give the reasons for your opinion.

A. For Massachusetts there is no evidence of commercial navigation on the Housatonic River by boats or vessels of any type and there are a number of eighteenth and nineteenth century statements that the river was not navigable. The river was simply not large or deep

enough for boat navigation. In addition, the rapid fall of the river in Berkshire County, Massachusetts, made it an exceedingly important stream for millsites. As early as the middle of the eighteenth century there were a number of mill dams constructed on the River, evidencing a lack of prior use of the River by vessels and, of course, precluding any future use.

Q. Dr. Collier, turning now to the Connecticut portion of the Housatonic River, during the eighteenth and nineteenth centuries was the Housatonic River a tidal stream from its mouth at Long Island Sound to the town of Derby, about twelve miles to the north?

A. Yes. Historical evidence shows that the river was tidal and navigable only from its mouth at Stratford to Derby, where the tidal estuary ended.

Q. Is there any evidence that the Housatonic River from the Massachusetts state line south to Derby was ever used to transport passengers or cargo during the eighteenth or nineteenth centuries?

A. I can assert with a high degree of certainty that the River, of great importance as a power source, was insignificant for transportation north of Derby. I dare say that no one in eighteenth or nineteenth-century Connecticut was making a living from the navigation of the Housatonic River north of Derby, nor is there any evidence that anyone was dependent on the River for transportation.

Although there exists some evidence that during the spring freshets boats of some sort could proceed from New Milford, Connecticut, to Derby, it is far from certain that these boats carried either passengers or cargo. It should also be pointed out that the one source reporting these downstream movements indicated that they occurred only in the spring. Another reference to boat navigation from Derby to New Milford is ambiguous at best and perhaps ingenuous, for its authors were promoting the construction of a canal. Although it is reasonable to assume that row boats, canoes and perhaps rafts were used at numerous points on the River to cross it and travel short distances north and south, there is no reason to believe that this boating had any economic significance.

On the other hand, there is ample evidence to demonstrate that Housatonic boat navigation, with the minor exceptions described above, went no farther north than Derby. Jedidiah and Richard Morse's Gazetteer (1821) listed the Housatonic River as navigable twelve miles inland, as did John Pease and John Niles, who added that boats could "ascent to Southbury, in seasons of highwater." -- that is, to the northern border of old Derby. A Gazetteer of the States of Connecticut and Rhode Island. (1819). J. W. Barber gave the limits of navigation as fourteen or fifteen miles from the mouth of the river. Connecticut Historical Collections, (2d. ed. 1836). Similar statements abound in archival materials at the Connecticut State Library and in local histories.

Q. Dr. Collier, is it your opinion that the advent of other modes of transportation, such as the railroad, was in any way responsible for the lack of boat navigation on the Housatonic north of Derby during the nineteenth century?

A. The coming of the railroad to the Housatonic Valley in 1840 had little to do with the lack of navigation on the river in the period prior to or after that date. The railroad did not supplant river transportation, since there was none to supplant.

Although residents in and around the Housatonic River north of Derby often planned to undertake action to clear the River for navigation purposes, none of the plans came to fruition. Proposals for the construction of highways along the river from northern points to Derby were offered in 1746, and 1761, but were never acted upon. A private effort to clear the River failed in 1762 due to the magnitude of the undertaking. In 1795 private petitioners requested authority from the Connecticut legislature to build a series of locks and keys to be located on a ten-mile stretch of the river from Newtown to New Milford. There is no evidence that this project was ever initiated. Finally, in 1822, an effort to promote the construction of a canal system along the river collapsed for lack of response.

Indeed, a modern authority, John C. Herbst, indicated to me in a telephone conversation that any efforts to make the River navigable during that period were necessarily doomed to failure because of its subsurface geology.

Q. Dr. Collier, if there existed no navigation along the Housatonic River north of Derby in the eighteenth and nineteenth centuries, what mode of transportation was utilized by the communities along the River north of Derby?

A. The fact of the matter is that transportation up and down the Housatonic River Valley above Derby was over land. Local histories abound with descriptions of foot, horse, wagon, and sled trips throughout the whole pre-railroad era. More scholarly evidence of the predominance of land transportation can be found, however. One Yale scholar, Loyal B. Clark, reports great drives of livestock from northern Litchfield County to the tidewater, and though he deals with the economic development of that county through the eighteenth and nineteenth centuries, he nowhere mentions water transport. "Economic Development" (1908). Wilma Fairchild's comprehensive study of Berkshire County in Massachusetts makes it clear that Housatonic River transportation from Western Massachusetts was never even considered, and concludes that the lack of cheap and easy transportation from the area was the principal cause of its industrial decline. "Changes in Industry in the Upper Housatonic Valley." (Unpublished M.A. thesis, Clark University, 1937). Indeed, one nineteenth-century observer describes the Berkshire County town of Sheffield on the Housatonic as "almost cut off from communication with the great cities--the social and commercial centers. . . ." Even as far south as New Milford, Connecticut the principal mid-eighteenth century merchant there traded regularly overland to New Haven.

By far the best and most authoritative description of overland transportation in the Housatonic River Valley is that given in Howell and Carlson's Empire Over the Dam (to be published, October 1974). This exhaustive study of nineteenth-century water power resources and uses in the seventeen Litchfield County towns of the Housatonic River watershed provides the best description written so far of commerce in the area. The authors have reconstructed in minute detail scores of damsites in the Judea section of Washington, Connecticut, and have walked over much of the rest of the countryside, locating beds of streams no longer extant. In addition, they have read numerous account books of nineteenth-century Litchfield County industries. They conclude that, "Long before the Housatonic Railroad

reached New Milford in 1840, sawed marble, chiefly in gravestone sizes, was shipped by the 'water level route' to Derby, then a thriving seaport on the east coast, and from there by boat to large cities." The term "water level route" as used here does not mean a route by water, but an overland route that followed the streams and rivers. "This route," the authors continue, "followed the Aspetuck River valley to New Milford and thence by the Housatonic River via Newtown to Derby." This is an overland route that Mr. Howell describes as lying fairly close to Connecticut Route 202 (until recently Route 25) from Washington to New Milford to Brookfield, down to Newtown via Hawleyville, thence to Derby on Route 34, crossing near Riverside, the probable location of Leavenworth's Ferry. In a personal interview Mr. Howell ruled out water transportation north of Derby as very unlikely.

Q. Dr. Collier, can you offer any further explanation for the lack of utilization of the Housatonic River north of Derby during the eighteenth and nineteenth centuries?

A. Because overland transportation in rugged western Connecticut of the pre-railroad era was not easy, one would have suspected that the farmers and millers of the regions north of Derby might have taken a greater interest in developing navigation on the Housatonic River. That they did not is in part due to the relatively self-sustaining nature of the mid-eighteenth and early-nineteenth century communities. But a much more significant element is the fact that they did not trade much with their southern neighbors on Long Island Sound. From the Berkshire Mountains of Massachusetts at the north all the way down to New Milford at the south, the dominant--almost exclusive--trade route was westerly. It was the Hudson River, not the Housatonic, that drew virtually all the trade in the region.

The westward orientation of Housatonic River Valley trade was given tremendous impetus during the Revolutionary War when the safer inland towns were used for collecting points for foodstuffs, livestock, and other military supplies. Gaspare John Saladino, the most thorough and recent scholar of the subject, deserves to be quoted at length in this regard.

Danbury, Litchfield, Sharon and Woo
were advantageously situated on roa
to provisions depots and grain prod
regions in the state of New York.
east and west, provisions and milit
supplies passed through them. Comm
stationed in the Hudson Valley tran
tens of thousands of barrels of flo
zines in the four towns, while comm
located in Connecticut sent large q
of livestock and barrelled meat to
in New York. Litchfield and Woodbu
joined with New York by a road whic
through New Milford. Widely used i
colonial period, this highway conti
much travelled during the Revolutio
the selectmen of New Milford descri
'very great Usefull and public Road
from the Eastern to the Southern St
Although it was not on a major road
to the Hudson Valley, Sharon was co
with the prominant Hudson River tow
Poughkeepsie by a road which went t
New Fairfield. The fourth town--Da
on the highway which went to Fishki
Peekskill--two large provisions dep
lower Hudson Valley. "The Economic
tion in Late Eighteenth Century Con
(Unpublished Ph.D. dissertation, Un
of Wisconsin, 1964).

Even a cursory reading of eighteenth
nineteenth-century newspapers makes abun
the concern of Berkshire and Litchfield
with affairs in Albany, Hudson, and Pough
Litchfield newspapers never failed to re
freezes, thaws, and general weather cond
the Hudson River. Shipping there, speed
destinations, and tunnage were all regul
while no similar interest was shown in a
the sometimes thriving port of Derby. A
prices, bankruptcies, sales, and artisan
west are all as prominent in the columns
as similar business to the south is cons
absent. "Western Connecticut inhabitant
Saladino, "preferred to transport their
New York state because this was cheaper
to Connecticut ports."

This westerly direction of Housatoni

r granted by local historians. Heavy
gricultural produce from Lenox went to
udson, as it did also from Lee, Great
and other Berkshire towns in Massachusetts,
came from New York City much more regularly
oston or Hartford. From Pittsfield in the
nth century, produce was carried to Albany
long the river to the steamboat connection,
ne railroad, at Hudson. Salisbury farmers
y or "upon the Hudson river," reported
rian in 1841, and the same was true in
vid D. Field reports that during the
volution "Large wagon trains loaded with
our--as many as 5000 barrels at a time--
ng rocky roads from the Hudson Valley to
History of Berkshire County, Massachusetts.
Kent, even such heavy commodities as iron
iron were hauled by teamsters to
e. Indeed, about 1790 the principal route
ea around Kent, Connecticut, to Stratford,
took one overland to Poughkeepsie, New York,
n a circuitous, though well-developed high-
Island Sound, thus ignoring the Housatonic
transportation.

Dwight helps explain this westward movement.
years before 1804, the inhabitants of
rote,

commendable spirit of exertion,
ened several turnpike roads into
tes of Massachusetts and
icut, and have thus created an
tercourse between their city and
derable tract of fertile and well
ed country. Travels in New
and New York. (B. Solomon ed.

ell reports that these roads, and others
hfield, New Milford, Newtown, and Danbury, all

to the Hudson were used to a
xtent for hauling timber and
which were to be floated down
dson] river to New York, for sale
r reshipment abroad, a tedious and
us journey, that diminished
lly the profits anticipated.

Canal schemes intended to aleviate this labor

> proved a failure and hence the trade of western Connecticut continued to go to the Hudson until the building of the Housatonic railroad in the nineteenth century. Roads and Road-Making in Colonial Connecticut. (1933)

Q. Dr. Collier, having established that the Housatonic River was not used for commercial boat navigation, is there any credible evidence of utilization of the Housatonic River to transport "masting" logs?

A. The great New England masting trade was confined almost entirely to Maine and New Hampshire, though Massachusetts did contribute as well. There was no masting done for the Royal Navy in Connecticut at all.

Masts suitable for use by the Royal Navy were from 60 to 120 feet long, weighed up to twenty tons, and required huge crews of lumbermen and teams of up to forty oxen. No such operation could have taken place on the Housatonic River, with its numerous shallows, rapids, and falls. If such an operation had occurred, some evidence would have remained for nineteenth century commentators to remark upon.

If more modest masting operations did occur, I have been unable to find any evidence that timbers were floated down the River. Indeed, there is ample evidence to indicate that transporting timber in general was done by dragging it over the snow on sleds.

Q. Dr. Collier, if there existed no "masting" trade along the Housatonic, have you found any convincing evidence which would suggest the use of the river for the transport of logs from other lumbering operations?

A. I have not. There does exist one source, a statement made in 1829 by a Mr. Chester Dewey of Pittsfield, Massachusetts, which suggests that in the spring pine and hemlock logs were "thrown" into the river near Great Barrington and Sheffield, Massachusetts, and that these logs eventually made their way downstream to Connecticut communities along the river. A probing scholar, however, will find a number of problems with such evidence.

First, there is no indication that Mr. Dewey himself was an eyewitness to the event. It is also possible that the logs he speaks of were in fact swept down river during spring floods accidentally, and that he mistook accounts he had heard. Indeed, Samuel Orcutt, a well-reputed late-nineteenth century local historian seems to suggest such unintentional flotation. He writes that "large quantities of cord-wood upon the shores, sawmill logs, ship-timbers, huge trees broken or torn up by their roots, houses, barns, and bridges were swept downstream almost annually by resistless floods." The History of the Town of Derby, Connecticut, 1642-1880. (1880).

More important, there is much negative evidence available showing that any use of the river for logging operations was implausible at best. At Great Falls, in New Milford, the river rapidly descends 130 feet, making it inconceivable that timber washed over the falls would not be broken to pieces in the process, and jammed along the rocks as well. An official Colony committee in 1762 found the following additional significant obstructions on the Housatonic River in Connecticut: a half mile carrying place at Canaan Falls; many stones and boulders to remove for eight or nine miles in Cornwall; a need for blasting at "Millses Falls" in Kent; a one-and-a-half mile carrying place at Bulls Mill at Ten Mile Falls also in Kent; a need for more blasting at Gaylord's Falls; a need for minor "mending," blasting, and a one-and-a-half-mile carrying place in New Milford; a need for "mending at sundry places" at the Shepaug River; a need for more mending at Little Falls at Eight Mile brook; and a need for small alterations thence to Derby.

A thorough reading of the Berkshire and Litchfield County newspapers for the 1790's through 1831 reveals no mention of Housatonic logging at all. Since county newspapers were full of accounts of fires, crimes, storms, agricultural curiosities, shipwrecks and accidents the absence of any reference to the passage of large quantities of logs along the river can only be explained by the absence of the event itself.

One should note, also, that logs sent down floatable streams must not only reach their destination, but they must stop there. Nowhere in the literature of the Housatonic River is there mention

of booms or cross river chains--the most common modes of catching drifting timber. Since it would have been impossible to float logs in the Housatonic except during the periods of most rapidly running water, booms or chains would have been especially necessary, and logs piled behind them would certainly have caused comment.

That such impediments as the Salisbury, Canaan and Kent falls in the Connecticut portion of the River made use of the river for transporting logs north of New Milford impossible is given support from a petition to the Connecticut General Assembly in 1761. A number of entrepreneurs wished to clear the Housatonic in order to make navigation possible by boat and also to permit "the floating down of large quantities of pine logs from the northerly part of Connecticut and Massachusetts" to the river's mouth. Just seven years before Dewey's description of floating logs, a group of canal promoters pointed out that timber at Canaan (which is in the northern part of Connecticut,) was valueless because it could not be floated down the river. Anonymous, Considerations on the Practicability and Importance of Opening a Navigation to the Interior of the State by the Housatonic River. (1822).

Finally, timber to feed lumber mills along the Housatonic and its tributaries was almost always a local product. In about twenty sawmill account books covering various periods from 1722 to 1862, which I have read page by page, I could find only a single entry relating to taking logs from a river. Salmon Buck of New Milford entered, on October 24, 1850, a debit "By 2 white wood trees in the river by agreement . . . 4 dollars or 5$ if I think they are worth it after I get them out." The implication here is that taking logs from rivers was an unusual event in Western Connecticut, an implication given greater force by the numerous entries in this ledger to drawing timber by ox team. In the many other ledgers surveyed, timber was carted, sledded, drawn, hauled, sledged, and carried, but never floated or rafted.

Q. Dr, Collier you have testified that the bulk of historical evidence leads to a conclusion that the Housatonic River has never been used to transport logs for lumbering operations. Could you explain, in a general manner, the economic importance of transportation to the industry in the Housatonic River region?

A. Actually, long distance transportation of timber

and wood products was not a dominating element in the Housatonic region's economy. A vast proportion of wood was used locally. The typical saw mill served an area only a few miles in radius, and drew its wood supply from sources equally close by. Hugh Maxwell (1918) reports that in the eighteenth century "Two men with a span of horses or a yoke of oxen could cut and haul enough logs to supply the little mill on the frontier where the customers were all found within a radius of four or five miles." The Development of Logging Operations." American Forestry, vol. 24 (May, 1918). Lumber box sleighs and wagons were offered for sale in newspapers, and frequent reports were carried of loads of wood as large as four or five cords.

No proportionate estimates are available, but it is entirely possible that only a small share of the upper Housatonic timber was used for lumber. Huge quantities, of course, were used for cord wood as home heating fuel. Equally large amounts were cut to make charcoal for use in the iron furnaces once so extensive in the entire area from New Milford north, and potash manufacturing also required large amounts of timber. Timber for these operations was moved locally, over short distances by team.

Q. In conclusion, Dr. Collier, could you summarize briefly your findings concerning the historical evidence of the status of navigation along the Housatonic River?

A. I have mentioned that the River was navigable from Long Island Sound to Derby. As there has been no commercial navigation on the Housatonic north of Derby in the twentieth century, my research indicates that there also was none in the eighteenth and nineteenth centuries, whether by boat or log flotation.

Project Nos. 2576,2604,2632 and 2646

Collier-Direct 142

AFFIDAVIT

STATE OF CONNECTICUT

Hartford, ss:

Christopher Collier, being duly sworn, deposes and says: that he has read the foregoing questions and answers labeled as his testimony in this proceeding, and if asked the questions therein his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge, information and belief.

Christopher Collier

Subscribed and sworn to before me
this 17th day of October 1974.

Marjorie B. Wakefield
Notary Public

My Commission expires:

My Commission Expires March 31, 1978

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL POWER COMMISSION

REBUTTAL TESTIMONY OF CHRISTOPHER COLLIER
IN THE MATTER OF THE CONNECTICUT
LIGHT AND POWER COMPANY, PWR-LP
PROJECT NOS. 2576, 2604, 2632, and 2646

Q. Are you the same Christopher Collier whose testimony was previously filed in this proceeding?

A. Yes, I am.

Q. Dr. Collier, have you reviewed the prepared testimony and exhibits submitted in this proceeding by the Commission Staff, the Connecticut Department of Environmental Protection and the Candlewood Lake Defense Associates?

A. Yes, I have.

Q. Do you have any general comments at this time regarding the quality and depth of the Staff and Intervenors' analyses of the historical uses of the Housatonic River?

A. Yes. Although I have no doubts about the sincere efforts of Mr. Clinton D. Hull, who prepared the Staff's materials, Mr. John Woodhull, who prepared the materials for the Connecticut Department of Environmental Protection, or Mr. Frederick Benedikt of the Candlewood Lake Defense Associates, I do question the validity of their work as historical research.

I do not believe that any of the above gentlemen is a professional historian. From the information submitted describing their experience, it is not clear whether any of these gentlemen has acquired experience in using the fundamental techniques of historical research. These matters are of importance since the validity of historical analysis hinges largely upon familiarity and experience in using the tools of the historian's trade.

One indication of the difference between the level of their analyses and my own is the tendency of these gentlemen to rely almost exclusively upon secondary source

materials. Oftentimes, these secondary sources are written by persons remote in time from the historical event which they are seeking to describe. As a result, those who depend solely upon secondary sources run the peril of relying too heavily upon the possible misrepresentations of authors who themselves were not witnesses to a particular event. As a result, reliance is often placed upon the misperceptions of an unsystematic and unscientific author.

In contrast, I have prepared a bibliography, designated as Exhibit C-1, for identification, for the direct testimony which I submitted in this proceeding, to demonstrate that my analysis went well beyond that of the Staff and the Intervenors. When I prepared my original testimony, I relied not only upon published histories, but also upon available primary manuscript sources, such as the newspapers, public records, personal journals and account books of the era I describe.

Q. Dr. Collier, both the Commission Staff and the Connecticut Department of Environmental Protection submitted reprints of historical sources with their materials; why did you not include such sources of your own?

A. To have included reprints of the historical sources which I studied would have been literally impossible. Some of the primary source materials were so fragile that they could not even be removed from their vaults to be photocopied. In addition, since I have spent no less than thirty-six (36) full days in researching the issue of the historical navigability of the Housatonic River, complete reproduction of even the pertinent sections of those sources would have burdened the Commissioners with a vast stack of printed materials. Consequently, I trust that my bibliography (Exhibit C-1), as well as my description of methods on pages two and three of my Prepared Testimony, will accurately reflect my efforts.

Q. Professor Collier, have the materials included in your Prepared Testimony been reviewed by any other scholar familiar with the history of the Housatonic River in the era which you describe?

A. Yes. I asked Professor Joseph B. Hoyt, of Southern Connecticut State College, to review my

work. Prior to reviewing my materials, Professor Hoyt was of the opinion (which I must confess I shared before undertaking my research) that the Housatonic River had a long history of navigation and log flotation.

After reading my materials, however, Professor Hoyt expressed to me that he was impressed with the thoroughness of my research and that he was convinced that my findings disposed of the question of navigability of the River. Regarding the logging issue, he expressed doubts about the reliability of the one piece of nineteenth century evidence which reports logging activity, since the author (Chester Dewey) was not a witness to the events he described. Furthermore, Professor Hoyt agreed that, due to the extent of my research, had any other evidence of logging operation existed, I would have found it.

Q. Dr. Collier, please comment on the historical materials offered by the Commission Staff.

A. As I mentioned above, the Staff has relied heavily upon secondary sources in its presentation. There is one exhibit in Mr. Hull's materials, however, upon which I would like to focus. Mr. Hull's Exhibit CDH-1 consists of Henry Parker Fellows' account of a rowboat excursion taken by two men down the Housatonic River in late September, circa 1883, and presumably was submitted to demonstrate the feasibility of navigating the River. (Ex. CDH-1, pp. 3-37). However, a careful study of this account will, I believe, bring readers to the reverse conclusion.

The trip was made at a time of normally low water, and in this year the late summer was particularly dry. (Ex. CDH-1, pp. 8, 36). This circumstance brought both advantages and disadvantages: it was easier to pass under low-lying obstructions (Ex. CDH-1, pp.7, 8, 30), and falls and some rapids were less treacherous. On the other hand, rocks and rapids were more frequently encountered than they would have been at seasons of higher water.

It is clear that the attempt to navigate the length of the River was extremely unusual. An effort by another party in a skiff a couple of years earlier had failed (Ex. CDH-1, pp. 30, 31, 36), and people along the River commented on a group that had made the trip in canoes the year before Fellows. (Ex. CDH-1, p. 27).

There are also references to the astonishment of school children (Ex. CDH-1, p. 26) and to the stampeding of startled farm animals (Ex. CDH-1, p. 15) at the sight of a boat on the River. Apparently one effort a year to go down the River was the maximum in the late nineteenth century. The trip from Pittsfield to the Sound took seven days (Ex. CDH-1, p. 36), and led Mr. Fellows to conclude, "A single word of caution: Be sure you know how to handle oars in wild water before embarking on the mad Housatonic." (Ex. CDH-1, p. 37).

The excursion required no less than twenty-one portages around dams -- some with a team of horses, and one at least 1-1/2 miles long.[1] Numerous rapids required poling (Ex. CDH-1, pp. 10, 11, 28) or, more often, caused one of the adventurers to row while the other walked along the shore. (Ex. CDH-1, p. 28). Several times both men left the boat and guided it through rough water by a cord attached to the bow as the other walked along the bank. (Ex. CDH-1, p. 25).

The travelers encountered frequent stonewall fishwiers that forced them to get out and lift the boat by hand (Ex. CDH-1, p. 28); a barbed wire fence stretched across the River (Ex. CDH-1, p. 7); and tree trunks "that sometimes almost blocked our way." (Ex. CDH-1, p. 23).

Despite the fact that it was low-flow season, twice the boat was driven onto rocks and swamped, with the temporary loss of all supplies. (Ex. CDH-1, pp. 26, 30). At Lenox the adventurers took a canal "as it is not advisable, under any circumstances, I should think, to try the river below the dam." (Ex. CDH-1, p. 10).

The author recommends that a team be hired in the town of Housatonic because the dams "are so near together, and the carries should be, the first so long, and all so troublesome, that it is a saving of time and vexations to get a team." (Ex. CDH-1, p. 28). At Lovers'

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1. Ex. CDH-1, pp. 10, 11, 12, 15, 16, 17, 18, 21, 25, 27, 28, 29, 30, 31, 32, 33, 35.

Leap in New Milford they had to lower the boat over the ledge that "makes a plunge here of thirty or forty feet," and finding the water below too rocky and too narrow, had to walk along beside while guiding the boat with a rope. (Ex. CDH-1, p. 25).

In short, although Mr. Fellows fully describes the charms of the Housatonic River, his account should convince readers that navigability is not one of them.

Q. Dr. Collier, the Staff has included in its exhibits (Ex. CDH-2, p. 4) a portion of A History of the County of Berkshire, Massachusetts written by Chester Dewey, which is offered to prove the existence of logging operations on the Housatonic River. Please comment on that exhibit.

A. As you know, I am not unfamiliar with Mr. Dewey's account of logging operations, since I mentioned his description in my prepared testimony. (Prepared Testimony of Christopher Collier, p. 10). The lack of any substantiating data, and the wide range of evidence pointing to the absence of major log drives makes most curious this assertion by a prominent and well-respected scientist. In addition to the materials developed in my prepared testimony on the subject, I find a couple of statements by Dewey himself that throw deeper into the darkness his floating logs.

Dewey describes a number of mill sites in Great Barrington, one in particular which he refers to as "important." Chester Dewey, "A General View of the County", in A History of the County of Berkshire, Massachusetts [David Dudley Field, ed. 1829]. Dams at these places would effectively prevent timber flotation of the substantial nature he describes. The River at Great Barrington, he says, was six or seven rods in width and less than three feet deep. (Dewey, p. 27). The March floods, described by Dewey on the same page on which he begins his discussion of the log drives, sometimes created floods a mile wide and ten feet deep. (Dewey, p. 27).

Dewey's description of the Canaan Falls also causes me to wonder about his accuracy in respect to log drives. "The river," he writes, "first falls

over a rock of about twenty feet perpendicular; and a little below, over the principal fall, about seventy feet, formed by a ledge of limestone, obliquely crossing the stream, increased a little by a dam erected on its top, and producing a very beautiful and grand appearance. After a rapid current for a short distance, where its waters are whirling and foaming by dashing against the rocky bottom, it falls about ten feet." (Dewey, p. 26).

Furthermore, there were six bridges in Sheffield, below Great Barrington, that certainly would be jeopardized by "thousands of logs" rushing down the spring freshets. (Dewey, p. 206). Additionally, Dewey describes the trade of the Massachusetts Housatonic River towns as westerly. "A little trade is carried on with Hartford, and some other towns on Connecticut river, and a little with Boston. But the far greater portion of the trade is with the city of New York, and the cities of Troy, Albany, and Hudson. The last mentioned markets are only about thirty miles from the principal towns of Berkshire. Among the articles carried to market are . . . barrels, staves and heading, pails and the like, timber for cabinet work, boards, plank, shingles . . . ." (Dewey, p. 176).

Finally, to further strengthen my contention that the timber of which Dewey writes was accidentally swept down river at times of floods, I provide here the full statement of Samuel Orcutt to which I alluded in my prepared testimony (Prepared Testimony of Christopher Collier, p. 11). In a section entitled "Freshets," Orcutt says:

> The water and ice floods in the Ousatonic and Naugatuck rivers in the long past, according to tradition, were more magnificant and terrible than in later years. Large quantities of cord-wood upon the shores, saw-mill logs, ship timbers, huge trees broken or torn up by the roots, houses, barnes and bridges were swept down stream almost annually by resistless floods.

> Once it was more lucrative to catch drift-wood during freshets than at present. This was frequently done by throwing a rope with a stone on its end over a log near the shore where it was clear of ice, and then towing it in. Samuel Orcutt, The History of the Old Town of Derby, Connecticut, 1642-1880. (1880). p. 339.

The freshets of which Orcutt writes occurred virtually annually; twenty-three of them are listed for the twenty-six years, 1853-1879. (Orcutt, p. 34.).

As a consequence of the large amount of negative evidence which suggests that the River was never used for logging operations, I must conclude that Mr. Dewey's account, at least to the extent that it may be interpreted as evidence of actual logging use as distinguished from accidental flooding, is unsubstantiated and of highly questionable value.

Q. Professor Collier, you have already commented on the Staff's reliance upon the works of Henry Parker Fellows (Ex. CDH-1) and Chester Dewey (Ex. CDH-2). Do you have any further comments about the materials submitted by the Staff?

A. Yes. The Staff has included an excerpt from Edward C. Starr's A History of Cornwall, Connecticut, A Typical New England Town (Ex. CDH-7). I have found Mr. Starr to be too inaccurate a source upon which to rely. My impression has been confirmed in a telephone interview with Mr. Garner Holmes of the Cornwall Historical Society. (September 4, 1974). Consequently, I have not relied upon another of the Staff's listed sources, I. H. Sterry and W. H. Garrigus' They Found A Way, Connecticut's Restless People (Ex. CDH-8), since that work relies upon Starr's book for its documentation.

In addition, Staff has introduced a portion of Joseph B. Hoyt's The Connecticut Story. (Ex. CDH-3). Professor Hoyt is a well-qualified geographer, but nowhere in his book has he asserted that navigation or logging operations occurred along the Housatonic River. Finally, although the other sources submitted by Staff are generally competent, the excerpts submitted as exhibits contain no positive evidence of navigation or logging along the River.

Q. Dr. Collier, please comment on the historical materials submitted by the Connecticut Department of Environmental Protection which concern the issue of navigability of the Housatonic River.

A. The Department of Environmental Protection's report was prepared by Mr. John Woodhull, a summer intern, who worked exclusively at the Connecticut State Library. (Joseph Hickey to Allen Kosloff, Interdepartment Message, October 18, 1974). Mr. Woodhull appears to have relied entirely on printed sources, for his references in Appendix D to the Archives at the Connecticut State Library indicate that he read the typescript indexes only and did not study the manuscript documents. He refers, for instance, to page numbers when in fact these are document numbers, a fact of which he could not be unaware had he actually handled the materials.

Also damaging to Mr. Woodhull's credibility is his statement on page 1 of his report that New Haven Colony in 1639 "began to expand toward the Housatonic with the establishment of New Milford." ("Navigability of the Housatonic River", p. 1). There was no European penetration as far inland as New Milford before the early 18th century. Indeed, on checking Mr. Woodhull's citation, I find that the discussion there was of the expansion along Long Island Sound to Milford, at the mouth of the River, not New Milford, which is located approximately forty miles up the Housatonic and which was not founded until 1707. Rollin G. Osterweis, Three Centuries of New Haven, 1638-1938. (1954) p. 23.

Only two other elements of Mr. Woodhull's report relate to the Housatonic River north of Derby. The matter of floating masts to downriver shipyards has been thoroughly discussed in my original testimony. (Prepared Testimony of Christopher Collier, p. 10). The question of Stephen Goodyear's trading post requires more extensive treatment at this time.

There is evidence of the establishment of an Indian fur trading post on an island below Great Falls in New Milford at about 1646 that remained active to 1658 at the latest. William G. Andrews, "The Trading-House on the Paugasset", Papers of the New Haven Colony Historical Society, Vol. IV. (1888) pp. 390, 393. There is no

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evidence that goods were carried down the River from that point to Derby and thence overland to New Haven (Andrews, pp. 388-389). Further, there is no evidence that goods which might have been traded at that post ever arrived at any destination within or without the Colony. Indeed, there is no positive evidence that active trading did in fact develop at that place.

Q. Finally, Dr. Collier, please comment on the materials submitted by the Candlewood Lake Defense Associates, intervenors in this proceeding.

A. Though the author of the Candlewood Lake Defense Associates' materials is admirably devoted to his cause, unfortunately his materials are not based on reliable historical analysis. The Intervenors' assertion that the Housatonic River played an important part "in the establishment of the Nation itself" (Candlewood "Brief" p. 9) is an obvious overstatement. Even more so is the claim that the Housatonic River "was the life-center of man as he existed in [pre-historic] New England." (Candlewood "Brief" p. 10). Such conclusions demonstrate a complete lack of knowledge of anthropology, historical archeology, ethnology, geography and simple research methods and strongly suggest that the author's opinions should be disqualified from serious consideration.

I do not believe that Mr. Edmund Swigart (not, as given on p. 10 of the Candlewood "Brief", "Dr. Swigart") is a competent source. Mr. Swigart, the Intervenors' principal consultant, has no formal training in archeology. Mr. Swigart himself told me in a telephone conference on October 31, 1974, that he did not find "old drawings on stone of BOATS WITH KEELS," as reported by the Intervenors. (Candlewood Brief", p. 10). Rather, the artifacts in question are carved stones called "boat stones" because their shape resembles modern keeled boats. There were carried, Mr. Swigart explained, from as far west as Ohio to Connecticut burial sites.

I hope that it is clear from this brief criticism of a significant segment of the Candlewood presentation that the materials offered by the Intervenors are unreliable, inaccurate and imprecisely documented.

Collier - Direct 1452

F.P.C. PWR-LP
Project Nos. 2576, 2604,
2632 and 2646

AFFIDAVIT

STATE OF CONNECTICUT

Hartford, ss:

Christopher Collier, being duly sworn, deposes and says: that he has read the foregoing questions and answers labeled as his rebuttal testimony in this proceeding, and if asked the questions thereir his answers in response would be as shown; that the facts contained in said answers are true to the best of his knowledge, information and belief.

Christopher Collier

Subscribed and sworn to before me
this 7th day of November 1974.

Notary Public

My Commission expires: March 31, 1976

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MR. MC INTOSH: I assume, sir, you have admitted his prepared testimony into evidence, subject to any later motions?

PRESIDING JUDGE: That is correct.

BY MR. MC INTOSH:

Q Was a document entitled "Bibliography of Christopher Collier," consisting of 12 pages, prepared by you?

A Yes.

Q Is this document referred to on page 2 of your prepared rebuttal testimony as Exhibit C-1?

A It is.

Q Do you sponsor this document as an exhibit in this proceeding?

A I do.

MR. MC INTOSH: I request that the 12-page document entitled "Bibliography of Christopher Collier," identified in this witness' prepared rebuttal testimony as Exhibit C-1, be identified as Exhibit No. 11 and admitted in evidence.

PRESIDING JUDGE: Will there be any objection?

MR. TELLEEN: Staff would like to reserve the opportunity to object at a later time if it is decided to do so.

PRESIDING JUDGE: You better remind me of that. This exhibit will be marked Exhibit 11 for identification.

(THE DOCUMENT REFERRED TO WAS MARKED AS EXHIBIT NO. 11 FOR IDENTIFICATION)

MR. MC INTOSH: Your Honor, I would like to ask the

witness if there are any changes or corrections to that exhibit.

THE WITNESS: Yes, sir. There is one change in the exhibit called Exhibit C-1.

On page 3 there is a bibliographic item omitted. It would logically fall between the items written by Church and Colles.

BY MR. MC INTOSH:

Q That would then be the third item on this page?

A Yes. It is:

"Clark, Loyal B.,'Economic Development of Litchfield County.' (1908). Typescript in Litchfield box of Connecticut miscellaneous manuscripts, Yale University Historical Manuscripts Room, Sterling Memorial Library."

Q Do you have any other changes or corrections to make in that exhibit?

A No, sir.

MR. MC INTOSH: Your Honor, I believe it has been sponsored by the witness and you have admitted it in evidence.

PRESIDING JUDGE: The testimony has been admitted into evidence. The particular exhibit is the only one other than the item for identification, the only exhibit that has been marked merely for identification and has not yet been admitted in evidence. Mr. Telleen has reserved his right to object.

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Please remind me of the need to dispose of that exhibit.

Does that close your direct and rebuttal case?

MR. MC INTOSH: It does, Your Honor.

PRESIDING JUDGE: I guess we might as well begin cross-examination after lunch.

(Whereupon, at 12:15 p.m. the hearing was recessed to reconvene at 1:30 p.m.)

AFTERNOON SESSION

(1:30 p.m.)

PRESIDING JUDGE: On the record.

Are we ready for cross-examination?

MR. MC INTOSH: I believe we are, Your Honor.

PRESIDING JUDGE: Your first witness for cross-examination is --

MR. MC INTOSH: Mr. Lull, sir.

PRESIDING JUDGE: Mr. Lull, will you please take the stand? You have already been sworn.

Whereupon,

S. HALE LULL

resumed the witness stand, and having previously been duly sworn, was examined and testified further as follows:

MR. KOSLOFF: Your Honor, I have no questions for Mr. Lull.

PRESIDING JUDGE: Mr. Telleen.

MR. TELLEEN: Yes, Your Honor.

CROSS-EXAMINATION

BY MR. TELLEEN:

Q Mr. Lull, do you have a copy of your direct testimony?

A Yes, I do.

Q I will try to refer to specific parts of your direct testimony and then later your rebuttal. Hopefully,

that will facilitate understanding the questions, both for you and for the parties.

Referring to page 2 of your direct testimony, line 28, you state that the "Total capacity of the plants is 115.7 megawatts." And you say, ". . . which serves a portion of Southwestern Connecticut having a projected 1974 peak load of 714 megawatts and a minimum load of 293 megawatts."

Would it be possible for you to supply us generally at this time with actual figures as opposed to projected peak and minimum-load figures?

A For 1974?

Q Well, yes.

A I am sorry. In all probability many of the 1974 peaks have not yet occurred.

Q Would it be possible -- do you have any idea what those were for 1973?

A I guess, I assume, we have estimates of those for 1973.

Q Do you have those with you at this time?

A I do not have them with me.

Q Do you have them in mind?

A I do not have them with me.

PRESIDING JUDGE: Off the record.

(Discussion off the record)

PRESIDING JUDGE: On the record.

BY MR. TELLEEN:

Q In regard to the figures we were speaking of at line 28 would it be your best judgment that the 1973 actual figures would be lower than those projected figures you list here?

A Yes, I would anticipate that.

Q Generally in the same area, you refer to your Exhibits L-1 through L-4. Are the loads shown on those exhibits coincidental with actual or projected peak and minimum loads?

A All of the loads shown on those estimates -- on those exhibits, are estimated loads, representative of the peak loads we estimate to be there in 1974.

Q In that sense they are projected as opposed to actual?

A That is right.

Q Referring to line 43 of page 2 of your direct testimony, you use the word "resistance" at the end of that line. You say, "Since power flow follows the path of least resistance." Did you mean there "impedance" rather than "resistance"?

A I should have used the word "impedance," yes.

Q Does a generating station at its connection, or point of connection, with a transmission system in effect face or, shall I say, look into an equivalent impedance?

h 12

A I guess at any point on the system you can develop an equivalent impedance that one part of the system is looking into. So, yes.

PRESIDING JUDGE: May I interrupt at this point? For my benefit will either of you define the term "impedance"? What is an impedance?

THE WITNESS: Impedance is the --

PRESIDING JUDGE: Can anyone help?

MR. MC INTOSH: This gentleman is an expert. I am sure he will give it to you, but he is not going to give it in lay terms, that will be the problem.

PRESIDING JUDGE: Off the record.

(Discussion off the record)

PRESIDING JUDGE: On the record.

Will you give us your own statement?

THE WITNESS: Impedance is the total opposition to the flow of current. It is the vector sum of the resistance and the reactance in the circuit.

BY MR. TELLEEN:

Q Mr. Lull, I believe you stated the generating system in this sense interfaces with -- at the point of connection with the transmission system, what amounts to an equivalent impedance. Is this equivalent impedance comprised of a number of circuits which are effectively connected in series and in parallel?

A The total system which makes up the equivalent, yes.

Q Comprised of a number of circuits?

A Yes.

Q Effectively connected?

A Yes.

Q Would the greatest amount of power flow be over the branch of this equivalent circuit having the lowest impedance?

A That is correct.

Q Having answered that question, would a portion of the power from the generating station flow over the branch having the highest impedance?

A In getting from the generator to a load it would, yes.

Q Turning to page 3 of your direct testimony, at line 17 you say in reference to a digital model of your transmission system, "We are able to ascertain where the power flows on the various transmission lines under any particular load and generating situation."

When you use the phrase "any particular load and generating situation" are you referring to what might be called an instantaneous condition, or instant point in time?

A That is correct.

Q Was your digital model to which you referred

h 14

supplied data concerning four instantaneous conditions or points in time?

A That is correct.

Q Those four are shown on your four exhibits?

A That is correct.

Q L-1 through L-4?

A That is correct.

Q Would it be possible to program or set your digital model for a particular load and generating situation which would show power going from Frost Bridge and Norwalk substations to the New York State line?

A Would you repeat that question?

Q Yes, Mr. Lull.

Would it be possible for your digital model to -- let me go back.

Would it be possible to program your digital model for a particular load and generating situation which would show power going from the Frost Bridge and the Norwalk substations to the New York State line? We are speaking now of the digital model.

A I am going to have to ask for further clarification of the question. At the Frost Bridge, for instance, you asked about the substation, and the --

Q And the Norwalk Harbor.

Before you go on, did you understand what I said about

the possibility of programing your digital model to show such a condition? That is really the thrust of my question. I think perhaps it could be answered with a relatively simple answer.

A I still would like clarification, particularly as to out of the Frost Bridge substation. There are two buses at Frost Bridge, one a 115kV bus, the other 345kV bus. They are interconnected by, I believe, at the present time one 345kV-115kV transformer.

Before I could possibly answer the question I need to know which bus you refer to when you refer to the Frost Bridge substation.

Q In response to your question to me for clarification, we would be concerned in terms of the digital model, the 345kV bus at Frost Bridge.

A It would be quite simple to program the model so power would flow through the Frost Bridge substation at 345 and on to New York State, yes.

May I clarify that? It would not be power coming from the 115kV sub in Frost Bridge, the 115kV bus in Frost Bridge Power Station. It would be power coming from a generating station directly connected with a 345kV system such as the Connecticut Yankee plant or the Millstone plant.

Q I think we can bring that out later.

You just said power -- that such a model could exist as

h 16

to the 345 bus. Then you suggested it would not come from the 115kV line. Is it possible to -- can system adjustments occur which will permit power to flow to New York State?

A Power from where, sir?

Q I assume from the 115. We are speaking now in terms of your statement as to where the specific power was coming from.

A I am trying to understand --

Q I am sorry. I made a mistake. Instead of saying the 115kV bus I should have said the 345kV bus.

A Now may I have it clarified once more? Perhaps I will get it this time.

Q Originally you said it would be possible to program the digital model to show power flowing. Then we got into the peripheral area of actual power and actual power flows, so forth.

The question we want to ask is: Can system adjustments occur which will permit power to flow to New York?

A Power frequently flows from somewhere on the interconnected system into New York, yes, sir.

Q Thank you.

A As I explained, usually from a plant directly connected to the 345kV system.

Q Thank you.

Now back to our question as to, you said it would be

possible to program your digital model to show such flow.

Have you made any such studies?

A Not for the purpose of this proceeding.

Q Have you made them generally, or at some point in the past?

A Certainly. Many, many studies have shown power flowing to New York.

Q The next question gets a little -- it is what we were touching on earlier. At various times in the past has power actually flowed from Connecticut to New York via Frost Bridge and Norwalk Harbor substations?

A Frost Bridge and Norwalk Harbor substations? The answer to that question is yes.

Q In reference to your first four exhibits, at such times when power flows out of Connecticut via Frost Bridge and Norwalk would the flows shown on your Exhibits L-1 through L-4 be different?

A The flows would undoubtedly be different to a major degree, but the power would not reverse as it flows from the Frost Bridge 345kV system -- correction -- from the Frost Bridge 345kV bus to the Frost Bridge 115kV bus.

Q But power --

A There might be less of it. It would not reverse in direction.

Q The figures you show in your exhibits would not be the same?

A. They would not be the same. But the direction of flow would still be toward the load area under question.

At Norwalk Harbor the power would flow over the cable toward --

Q. Long Island?

A. -- Long Island. But the lines from the Norwalk Substation to Norwalk Harbor would still show flows into Norwalk although admittedly they would be slightly less than the flows shown in these exhibits.

Q. And the lines at Frost Bridge would differ, or the figures as to Frost Bridge would differ from what you show in your 4 exhibits?

A. I have to hypothesize that the power is flowing either to Long Island or to New York at Pleasant Valley, one or the other.

Assuming the power is flowing from Frost Bridge into New York there would be slight adjustments probably in all circuits at the Frost Bridge Substation. But there would not be reversal of power.

Q. Staying on page 3, going to line 38, as an aid to the record in this proceeding, does the sentence beginning there on line 38 of page 3 refer to the instantaneous condition or points in time shown in Exhibit L-1?

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A. This particular statement refers to the condition of the flow at --

Q. As shown in Exhibit L-1?

A. It shows the flow at the North Bloomfield Substation as it was in Exhibit L-1.

Q. That specific condition?

A. Yes.

I should point out that this is the periphery of the diagram, and the circuity between North Bloomfield and Frost Bridge is not a single line. The flows shown on here are the flows that exist at North Bloomfield.

Q. You made a correction on L-1 this morning in terms of the Shepaug bus.

A. Yes.

Q. When you adopted your direct testimony and the exhibit was submitted.

A. Yes.

Q. Going to line 48, page 3, you generally make the statement as to Exhibit L-2 that "load flow conditions are generally the same," in reference to Exhibit L-1, except with the expected increase in magnitude.

A. Yes.

Q. Does this expected increase in magnitude refer to the increase in energy flow into Connecticut as shown on Exhibit L-2?

is3

A. Into this specific load area, which is only part of Connecticut.

Q. Is this increase caused directly by the absence of hydro generation?

A. Yes, it is.

I point out that is normal condition at light load, hydro power would not be in operation.

Q. You agreed, though, the increase was caused by the absence of hydro? That was your statement?

A. The increase between the two, yes.

Q. On page 4, line 7, again you say that Exhibit L-4 assumes the same full-load condition as Exhibit L-3 but with no hydro generation."

Is the increase in flow into Connecticut or this section of Connecticut which is shown on Exhibit L-4 directly caused by the absence of hydro generation?

A. Yes, it is.

Q. Going to line 10, again as an aid to the record, Mr. Lull, do the 3 paragraphs which really precede line 10 of page 4 -- by that I mean the last paragraph on page 3 and the first 2 paragraphs on page 4 -- do they refer to the 3 instantaneous conditions or points in time which are shown by Exhibits L-2, L-3, and L-4?

A. Yes, they do.

Q. Now, referring to page 4, lines 12 through 16, do

is4

the comments on those lines refer to the 4 instantaneous conditions or points in time shown in your first 4 exhibits?

A. Yes.

Q. Thank you.

Now, referring to Exhibit L-1, and specifically the Frost Bridge Substation, which is in the upper right-hand corner, will you explain the 2 symbols above the number "129.2" and below the number "9.4"?

I think you might have touched on it this morning.

I am concerned with the symbols above and below the 2 numbers.

A. These are a convention used in presenting a load flow of this type. Conventionally on any circuit you place the megawatts above the line, the megavars below the line, you indicate the direction of flow, the megawatt flow, with an arrow, and you indicate the direction of megavar flow with an arrow that has a slash through it.

Q. Would you say -- what are we talking about when we say "megawatts", are we talking about real power? This is real power, energy?

A. This is real power -- energy.

Q. When we speak of "megavars" are we referring to, imaginary or reactive power?

A. That is correct.

Q. Or "vars"?

is5

A. That is correct.

Q. Going back to page 4, line 35, you say Exhibits L-1 and L-3 show that under all circumstances the flows from these points are toward rather than away from the 4 hydro plants. You say that therefore the power generated by these plants could not leave the State of Connecticut by interconnections to other States.

Is it your opinion that the studies summarized on Exhibits L-1 through L-4 provide sufficient basis for you to conclude that no system adjustments or load conditions will occur to cause power to be exported?

A. No, it is not.

However, it is my opinion that these exhibits are sufficient for me, based on my knowledge of Northeast Utilities transmission to conclude that under no normal operating condition power generated at these hydro plants could leave the State of Connecticut by interconnections to other States.

Q. Are you saying if Connecticut Light and Power, or Northeast Utilities desired to export energy to neighboring loads it would be impossible to accomplish this because of the design of the interconnected networks with which we are here concerned?

A. I could simply answer "No." I would like to elaborate a little if I may.

Q. The simple answer is "No."

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A. The simple answer is "no," to the question as you frame it, yes.

PRESIDING JUDGE: Why do you not give a full answer that satisfies you?

THE WITNESS: If the question that is being asked me is, under any normal operating condition can Northeast Utilities satisfy its own loads in the area and transmit Housatonic hydro power to across State lines, the answer is "no."

But most assuredly we can transmit power across State lines. We have many other generators.

BY MR. TELLEEN:

Q What you are saying is that power generated in Connecticut can flow from Connecticut on on Northeast Utilities interconnected transmission system to other States?

A. Some power can, yes. My testimony addresses itself to the hydro power on the Housatonic River, only.

Q. My question addressed power in Connecticut generally, flowing interstate via your interconnected transmission system. Such power does go interstate?

A. Certainly it does.

Q. It can, and it does?

A. It can and it does.

Q. Just one last question, I think, Mr. Lull.

Is there any conceivable situation where in under your concept of the "flow of generation from the 4 hydro plants"

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that power could be sent to another State? For the purpose of this question we are assuming your contention that while power generated in Connecticut goes interstate, power at the 4 projects does not under normal load conditions go interstate.

My question is: Given that assumption which you support here, is it an emergency situation possibly, in your mind, where that power would go interstate?

A. It is my contention that there is sufficient load in the area of these plants even at times of minimum load so tha no matter what configuration of generation is dispatched by the dispatcher, none of the Housatonic hydro can get beyond the State borders unless we fail to meet some of these loads of our own in the process, or unless we tear our system apart and deliverately dedicate some of it to the purpose of getting it across the State line and, I hav eno way of knowing whether we have enough system under those conditions to meet our own needs.

It is an unreasonable supposition.

Q. Again assuming your notion of flow, of generation flow, and your position that the hydro project, the 4 hydro project generation does not leave the load area in Southwest Connecticut, this is what I am driving at: If, for example, there were a drastic emergency, such as a blackout, on Long Island, I believe the Norwalk Harbor lines flow to Long Island.

Is that true?

A. There is a cable from Norwalk Harbor Substation to Long Island.

Q. Would it be possible for the hydro generation to be sent to Long Island in that instance by rearranging your system place, and so forth?

A. Unless you shut down at least one of the Norwalk Harbor units the two Norwalk Harbor units exceed the capacity of that table. If they are both going as they ought to be in an emergency situation, those two units will more than fully load that cable, in a normal situation, and as a result the lines from Norwalk Harbor north to Norwalk Substation would still have flows on them to the north toward the Housatonic hydro even though the ~~tables~~ cable to Long Island ~~were~~ was fully loaded.

MR. TELLEEN: Thank you, Mr. Lull.

I have no more questions, Your Honor.

MR. BENEDICT: I have questions.

PRESIDING JUDGE: Your turn will be soon, sir.

Mr. Kosloff?

MR. KOSLOFF: No questions.

PRESIDING JUDGE: Mr. Benedict?

BY MR. BENEDICT:

Q. Is the system of Housatonic dams considered part of an interstate grid, as a whole?

A. Interstate transmission grid?

is9

Q. Yes.

A. Yes.

Q. Is hydroelectric power expandable at, for instance, Rocky River, by putting in another turbine?

A. That is a question that should be referred to our hydraulic engineer, Mr. Ferreira.

Q. Was there at the end of 1972 and the beginning of 1973 a lowering of Lake Candlewood, so that a much larger capacity transmission line could be taken from Rocky River over to the west toward the New York border?

A. When was this?

Q. About a year and a half ago. The Lake was lowered for that purpose?

A. I am sorry, I have not the faintest idea.

Q. If one of the hydroelectric plants goes out, what happens? Where do we get power from?

A. From the many other generators on our system and on other systems in this grid.

Q. I see you say the area as a whole is a deficit area, that more has to be brought in than is generated by the hydro plants.

A. That is correct.

Q. At such times as there is a peak use and you had this mixture, is it not a little like a glass of water, where one can not say exactly drawing from a tap that part came from

is10 the ground waters right beneath and part of your well system may have come from Vermont?

In other words, can one distinguish in this admixture coming in of what is hydro and what is the other?

A I am quite willing to concede once megawatts from a steam unit commingle, to use the term of the Federal Power Commission, with the megawatts of the hydro plants, you can no longer separate them and distinguish them. But it is quite possible to meter the direction of flow on a line. And I have demonstrated that we can isolate the commingling of this power and show it is confined within this area and does not cross State lines. That is simply the point of my testimony.

Q When we come to such a question as Orange-Rockland Utilities, and Brewster, and Putnam Lake, perhaps I should await Mr. Ferretti, since that is directly connected with the Rocky River.

You said you wanted me to leave some of the questions about the line under Candlewood Lake and so on for him.

I am trying to develop that for some of this power, it is more feasible practically speaking to transmit it from Rocky River to adjacent parts of New York State and Putnam County than to bring it in from the actual utility operating there.

The Shepaug Dam is the central dam of these Housatonics, Bull's Bridge, Rocky River, then Shepaug, and the 2 lower ones.

A There is only one south of Shepaug. Stephenson

is below Shepaug.

Q If the Shepaug Dam were navigable, I mean under Federal Power jurisdiction, would it be practical to have the other dams also on the Housatonic interstate river considered not under FPC jurisdiction?

Do you feel it is either all or nothing?

There are four dams involved in this withdrawal application. Do you feel it is feasible for the Commission to rule some of the dams would be under its jurisdiction and others not?

MR. McINTOSH: I don't believe that question is appropriate for this witness.

PRESIDING JUDGE: He can say he cannot answer the question. That is a perfectly acceptable answer.

THE WITNESS: I have not the faintest idea whether it is or is not.

BY MR. BENEDICT:

Q Who is Northeast Utilities? That is stated on the first page of your document.

A Who is it?

Q Yes.

A Northeast Utilities is the holding company which has several subsidiaries, one of which is Northeast Utilities Service Company, for which I work. Another is Connecticut Light and Power Company. There is Hartford Electric Light Company, Western Massachusetts Electric Company, Holyoke Water Power company, and others.

Q Who is "Electric Power of East Berlin," the applicant for the construction of the Sharpeast Dam?

A That is before my time. I cannot answer the question. Probably you should ask Mr. Ferreira.

Q Is it correct to say the overall capacity of Northeast Utilities is 5.3 million kilowatts, approximately, of which you are using 3.6?

A You are correct that our peak load is approximately 3.6.

I don't have total capacity readily available.

I could probably get it for you.

Q I think that was accepted at the hearings of the Connecticut Light and Power --

A Sorry. I have the number. 5,646 megawatts.

Q In other words, even more than I said. Wouldn't that be considered an extremely large reserve capacity for a utility, about one-thirds?

A At the moment it is quite large, yes.

Q Yet is it not a fact that based on this Rocky River Plant, an application in July went before the Public Facilities Evaluation Council of Connecticut hearings in New Milford, lengthy hearings, at which it was proposed to build-- and there is actually a huge amount of construction -- a 345 kilovolt line from the New Milford Rocky River Plant down to Danbury?

A That is a fact, yes.

Q Is it not also a fact that the Connecticut Light and Power Company has said if this line is not approved they would also have to abandon as impractical their other application for a heavy line from Southbury?

MR. MC INTOSH: I cannot follow the relevancy of this testimony, your Honor.

PRESIDING JUDGE: Are you a lawyer, Mr. Benedict?

MR. BENEDICT: I am not.

PRESIDING JUDGE: I am allowing you a great deal of

leeway in view of the fact you are not a lawyer. But I cannot permit you to roam at large. What are you trying to establish by this line?

MR. BENEDICT: I am trying to establish that this plant which is called, you might say, a minor plant, not under Federal jurisdiction is actually the basing point of huge programs of Connecticut Light and Power.

PRESIDING JUDGE: If you ask about that what conclusion would follow?

MR. BENEDICT: That it would become very much part of an interstate grid system that would be very much under your concern .

PRESIDING JUDGE: But there is no question about the fact that there is an interstate grid system that is subject to the Federal Power Commission's jurisdiction. Is that not so?

MR. BENEDICT: It is disputed, insofar as it is based on this plant.

PRESIDING JUDGE: But you are not proving that the interstate grid system will be based on this plant.

MR. BENEDICT: They are using the premises.

PRESIDING JUDGE: The objections to your questions are sustained. If you have further questions you may proceed.

BY MR. BENEDICT:

Q I also have an idea, your Honor, that the Connecticut Light and Power Company frequently conceded the navigability of the river and the jurisdiction, and are trying to take it back.

PRESIDING JUDGE: Is this the witness for navigability? I don't believe so.

MR. BENEDICT: All right.

PRESIDING JUDGE: I think we better defer that until we have a witness. I am not saying the questions will be approved or not objected to. But we will defer that.

Have you finished?

MR. BENEDICT: I guess I better be.

PRESIDING JUDGE: Mrs. Boikess?

MS. BOIKESS: Your Honor, at the pre-hearing conference we had an opportunity to introduce ourselves. I would like to precede my questions by an introduction indicating our concern.

PRESIDING JUDGE: Let's make it part of your question, and probably avoid an objection that way.

BY MS. BOIKESS:

Q I am the attorney for the Candlewood Lake Authority, comprised of the five counties around the lake.

Candlewood is the reservoir for the plant.

We are intervenors in the project application involving the Rocky River plant. My questions will involve the Rocky River plant.

Is it your testimony that power is in fact used nearest the point where it is generated? I refer to page 2 of your testimony, sir, approximately line 15.

A It is my testimony that the power once generated goes out on the circuits and seeks to reach ground, and goes to ground through loads.

Obviously, if the loads are sufficiently large near the plant the power is going to be absorbed in those close loads.

Q With respect to the Rocky River plant, is it that more power is needed in the area near that plant than is generated by the plant?

A I have not attempted to delineate the load in relationship to a single plant. I have only referred to the load in this area, and the four hydro plants, as a group. In addition, there are also some steam plants in the area: the Norwalk Harbor plant, the Devon plant, and on the fringe of this system there is the United Illuminating system, and it has plants.

MS. BOIKESS: I have no other questions.

PRESIDING JUDGE: Mr. Lull, let me ask you a few questions.

Do I understand correctly that the power generated by these hydro plants is used for peak loads? Is it sort of generation of last resort?

THE WITNESS: The Housatonic River has only a limited amount of water and the plants can develop only a limited amount of energy. For this reason we find it more beneficial in meeting our loads to operate them only at times of peak. This means we use them only for short hours of duration, but we can operate them at full load.

The exception to this comes, of course, during the spring freshet period when the water comes at us almost constantly and we have to use it when it arrives, or it goes over the dam and we waste it.

PRESIDING JUDGE: During these spring freshets does your ordinary procedure change? Does it cease to be a generation for only peak loads, and is it used for other than peak loads?

THE WITNESS: During the spring freshet period the flow of the river is so constant and our storage so limited that the units become virtually base load units.

PRESIDING JUDGE: When they are base load units in periods of let us say other than peak load, is any of the power generated at these dams, which is after all very cheap power, because you do not use fuel there, does that change the situation in any respect insofar as

transmitting energy out of the State is concerned?

THE WITNESS: No, it does not. Even when they are operated as base-load units there is insufficient water to operate them at full capacity, and my exhibits have indicate that even during such times as you operate at full capacity and minimum load you will not get flow outside the State. So that -- the exhibit addresses itself, Exhibit 1, to a more severe situation than the one you just postulated.

PRESIDING JUDGE: Then in your opinion, there are no normal circumstances in which power generated at these dams will go out of the State, and I presume while there might be an emergency situation in which it might happen, it would be of a very infrequent nature.

THE WITNESS: It would have to be a very unusual emergency situation, because I think you would have to visualize a situation where for some reason we could not -- we were not able to meet our own loads and therefore could devote this generation to meeting someone else's loads.

PRESIDNG JUDGE: You might have a steam plant breakdown or, I presume, something of that sort, as an emergency?

THE WITNESS: True. But we always feel our first obligation is to meet our own loads.

PRESIDNG JUDGE: I am not suggesting you would

forego meeting your own loads. But you might have to use whatever power you have to meet your other obligations.

THE WITNESS: I understand that. But I maintain my position that no matter whether you operate at minimum load or maximum load, no matter whether the hydro is operating at minimum or at maximum, there is no way that this hydro power can get beyond this confined area. There is not enough of it.

PRESIDING JUDGE: I just wanted to be sure that I understand you.

THE WITNESS: It is an energy-deficient area.

PRESIDING JUDGE: Well now, look: Let us say that you have in operation plants that generate 95 whatever the unit may be, and say your hydro generates 5, and your intrastate demand is 90 and your out of state load is 10. In that situation would you be using the power generated from those projects?

THE WITNESS: We would be using it, but it would not be getting to the State lines. It would still be confined to this load area, and these key points that I have testified to still would not see a reversal of power.

The power going to New York would still come from generators that are outside the areas shown on my exhibits. These exhibits do not cover our entire system.

some of our biggest plants are not covered by this system; The Millstone Plant, the biggest on our system, the Northfield Mountain pumped hydro plant, neither one of them shows on this program. They are both external to this territory. Northfield Mountain is even in Massachusetts.

Connecticut Yankee, one of our bigger plants, is outside the extent shown on this diagram.

So any power that goes to New York will come from some one of those plants, because this power (indicating diagram) will all be absorbed right in local loads.

PRESIDNG JUDGE: Thank you, sir.

MR. MC INTOSH: Before redirect may I speak with the witness for just a moment?

PRESIDING JUDGE: Surely.

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REDIRECT EXAMINATION

BY MR. MC INTOSH:

Q Mr. Lull, in response to a question by Staff Counsel you referred to a contention that you were making regarding operation of the system under a particular set of conditions. When you used the word "contention," did you mean this was your expert opinion?

A Yes, I did.

Q In response to a number of questions by various counsel and by the Judge, you described your

opinion that the power from this area would continue to be used in this area and not flow out of this area under what you described as "normal operating conditions"; is that correct?

A. Yes.

Q. I would like to postulate for you the extreme emergency situation of the type perhaps as suggested by others, namely, that there is a failure of generation outside of this area, the loads continuing to be placed on the Northeast system in areas outside of Western Connecticut, and these hydro stations are only stations generating power in the Northeast system. Would power then flow out of this area?

A. You would have a situation, now, which is extremely abnormal. I am sure the power would attempt to spread itself over all available loads. It would be entirely inadequate to do the job. The system would collapse and our system would go into a probably complete blackout, and might even take some other systems with it. I could not venture to say just what the extent of the problem would be.

But if these were the only units we had available to meet all our loads it would be impossible to happen, the system would have to collapse.

May I correct that a little?

Provided we did not have enough help from other systems to keep us going.

Q In that connection, if you had enough help from other systems to meet the load the power from this area would remain in this area; is that correct?

A Yes, it would.

MR. MC INTOSH: Your Honor, I have no further questions.

PRESIDING JUDGE: Do you have any more, Mr. Telleen?

Mr. Kosloff?

MR. KOSLOFF: Yes, sir.

MR. TELLEEN: I have one question on recross, your Honor.

RECROSS EXAMINATION

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BY MR. TELLEEN:

Q I believe we established earlier that the four hydro projects are tied to the Northeast Utilities intrconnected system?

A Yes.

Q In that sense, using again your -- accepting for the purpose of this question and the answer you might give, your belief that under normal load conditions the power from the four projects stays in Southwest Connecticut, it is physically possible, because there are actually lines running from the plants through the

interconnected system to go across to Long Island or to New York, for that power to go from the four plants to another State?

A There are physical connections, yes.

Q In that sense, in that limited sense, it is a physical possibility for that power under your concept of power flow to go interstate, accepting what you said earlier about the system being in bad shape, and so forth?

A Well, there are physical connections. If you could arrive at a situation where you had adequate generation to meet the local loads and reverse the power at the points to the outside world, yes, you would see the reversal and you would get power flow then into the neighboring ~~United~~ States of the outside territory. Yes.

MR. TELLEEN: Thank you.

PRESIDING JUDGE: Mr. Benedict

BY MR. BENEDICT:

Q The Regional Authority determined there exists capacity in the Housatonic River six times as much or more as is being actually used from the river by C.L.&P. now for the Rocky River plant. That does not necessarily mean they will use it for drinking or potable water. If some of that water of this six times more capacity were used for hydroelectric generation, in those conditions would

there exist the possibility of further development of power and export to nearby areas say in New York State?

A. I must confess I don't know what the Regional Commission you refer to is.

Q. Should I supply the figures?

A. I know nothing about six times -- I accept your statements, but--

Q. I will be glad to place them in the record.

A. If you are asking me, if there were additional water available would it be possible to expand Rocky River --

Q. Yes. For more power generation.

A. From an electrical standpoint, I know of no reason why not. From a civil standpoint you will have to ask Mr. Ferreira.

PRESIDING JUDGE: Ms. Boikess?

Thank you very much, Mr. Lull.

(Witness excused.)

MR. MC INTOSH: Mr. Ferreira.

WHEREUPON

ANTONIO FERREIRA

was recalled to the stand, having been previously duly sworn, was further examined and testified further as follows:

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

MR. KOSLOFF: I have no questions of Mr. Ferreira.

PRESIDING JUDGE: That brings you to the floor, Mr. Telleen.

CROSS EXAMINATION

BY MR. TELLEEN.

Q Mr. Ferreira, you have direct testimony and rebuttal, I believe?

A Yes, sir.

PRESIDING JUDGE: You may conduct cross on both.

BY MR. TELLEEN:

Q Turning to page 4 of your direct testimony, Mr. Ferreira, at line 21 you say that the Rocky River is not used or usable for navigation. What do you mean when you use the word "Navigation"?

A In making that statement I checked the topographic features of the river.

Q Excuse me, What are you referring to by "Navigation"?

Do you mean boat navigation or something else?

A I am referring to boat navigation.

Q Would you say the Rocky River was used or usable for boat navigation before the dam which created -- which was built and created Lake Candlewood was built?

A. I do not know.

Q. On page 5 of your direct testimony at line 13, you speak of the Penstock of the Rocky River plant, saying that it "continues down the hill to the river's edge powerhouse."

Which river are you referring to?

A. The Housatonic River.

Q. So the Rocky River plant is on the Housatonic River?

A. Yes.

Q. And the Rocky River project takes water from and discharges water into the Housatonic River, essentially?

A. Yes.

Q. Not counting runoff.

At line 33 you say "The Rocky River project was constructed prior to August 26, 1935."

Were the two pumps at Rocky River made to work as generators before 1935?

A. No, they were made to work later than that.

Q. At page 6, line 18, you speak of the Shepaug Reservoir, I believe, and say at the Northern end of it is the Robertson Bleachery Dam.

Has the Shepaug dam caused inundation of the Robertson Bleachery Dam and Lovers Leap Gorge?

A. Not altogether, no.

Q. You mean part of the Robertson Diversion Dam is visible at normal high water?

A. I believe it is, yes.

Q. And the Lovers Leap Gorge extends some distance up into the area above high water of the Shepaug Reservoir?

A. Yes, it does.

Q. On page 7, line 53, you say a little above that, "There were three units of 7500 kw each and powerhouse bays, intake facilities and water passages for a fourth unit in the Stevenson Project initially."

Can you put a date on the word "initially"?

A. Those provisions were made for the addition of the fourth unit at about the same time as the power plant itself was built.

Q. When was that?

A. Oh --

Q. I believe you say elsewhere, but for the record --

A. Yes. I would have to check that.

Q. Was it before August 26, 1935?

A. Yes. Provisions were made prior to that for the addition of that unit.

Q. Sir, When was the fourth unit of which you speak physically installed at the Stevenson plant?

A. In 1936.

Q. Entirely in 1936?

A. Well, well --

Q. I mean, was the actual physical installation started?

A. It was completed in 1936, yes.

Q. When was it started?

A. If you consider --

Q. I am not considering planning. I am considering physical installation at the Stephenson Plant. When did that begin?

A. It began in late 1935.

Q. After August 26, 1935?

A. Yes.

Q. Referring now to line 54, what was the total plant discharge at Stevenson before the fourth unit was installed?

A. Approximately three-quarters of what the discharge is there now.

Q. What was average net head before the fourth unit's installation?

A. There was effectively no change in the average net head.

Q. You say "effectively." Was there a minor change?

A. Insofar as the plant rating is concerned, there

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was a negligible effect.

Q But there was some change in the average net head?

A Yes, with four units running the average net head is slightly less than it would be with three units running.

Q At page 8, line 1, what was the rated plant output or capacity of Stevenson before the fourth unit was installed?

A I think I indicated in the testimony that it was approximately 21,000.

Q 21,000 kilowatts?

A Kilowatts.

Q After the fourth unit was installed it was --

A 23.7

Q Megawatts?

A Megawatts.

Q 28,000 kilowatts or 28 megawatts?

A Right?

Q At page 8, line 6, you say "Construction was considered completed on December 2, 1919."

Who considered construction at Stevenson completed at that time?

PRESIDING JUDGE: Did you say "1919"?

MR. TELLEEN: I am sorry, 1920.

Who considered construction at Stephenson completed in 1920?

THE WITNESS: Theowners and operators of theplant at that time.

BY MR. TELLEEN:

Q At line 8, page 8, you say "The project was constructed ."

When are you referring to in making that statement?

A I am referring to the construction that took place during the initial construction of the plant.

Q Which was around 1920?

A Yes.

Q At line 14 you again use the term that the project was "constructed." At what time are you speaking of?

A In the 1920 - era.

Q Moving generally now to the area of line 39 onpage 8, did the Connecticut Light and Power Company or its predecessor in interest file a declaration of intention under Section 23(b) of the Federal Power Act before physically installing the fourth unit at Stephenson?

A I don't know the answer to that.

Q Is there some way you could determine the answer and tell us later?

A. Yes.

MR. TELLEEN: Would that be permissible, your Honor

PRESIDING JUDGE: Do you think you can give us the answer tomorrow?

THE WITNESS: Yes.I will try.

MR BY MR. TELLEEN:

Q. Online 46 of page 8 you talk generally about the installation of the fourth unit. Would you describe for us in a general sense just what took place at the Stevenson plant between January 1936 and august 27, 1936? What was there on New Year's of 1936 and what was there by the first of September?

A. Well, prior to the installation of the last unit the penstock provisions were made for the last unit.

Q. I am not -- excuse me, Mr. Ferreira. I am not concerned with what work may have occurred before the actual physical installation of the fourth unit. Your testimony speaks of that, and we can see that.

I just want a general idea of what the process amounted to of installing that fourth unit. For example, what was the size, weight, height, of the fo unit 7 Was it built on the premises? Was it carried in? What was the situation?

A. It was installed, as is characteristic of all

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hydroelectric plant, in that a turbine was purchased, a generator was purchased, and completion of the foundation was made, the provisions having been made in the powerhouse for the existence of that unit, and the scroll case was completed, wicket gates purchased along with the turbine, the turbine then installed in the wheel pit, and the generator installed on top of it, the appurtenances attached to it, the governor purchased and installed and the unit put in operation.

Q All the items you mentioned were not on the premises before the first of January, 1936?

A No, they were not.

Q On line 55 you say "CL & P and the consulting engineers regarded," and so forth.

Are the consulting engineers referred to by you at that point the same ones you note on page 9 at lines 2 and 3?

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A. I don't believe so. I will have to check that.

Q. Perhaps we can do it this way: Were these consulting engineers you mention on line 55 the employees of Connecticut Light and Power or its predecessor?

A. They were.

Q. That is sufficient.

On page 9, line 33, you say, -- use the term "significant work performed."

Would you say generally the word "construction" is another way of saying "significant work performed"?

A. It depends on the extent of the construction. The word "construction" is not necessarily -- it does not equal the word "significant."

I think perhaps what I am indicating is that I am not clear as to the question.

Q. I wondered generally, and it is a matter of semantics, you used the term "significant work performed." I wondered might others call that "construction," rather than "significant work performed" taking place; construction took place? Some might call it that?

A. Some might. It would be up to them.

Q. I think we touched on this earlier, but on line 55, page 9, you talk about the completion of the fourth unit. You made the point earlier, I believe, that the physical installatio of the fourth unit at Stephenson started before -- the actual

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water than 3 units.

Q By "some change," would you agree there is some effect?

MR. BENEDICT: Excuse me. Effect on what?

MR. TELLEEN: Effect on the flow pattern in the Housatonic River below Stephenson.

THE WITNESS: There would be an increase in the discharge from the plant, yes.

BY MR. TELLEEN:

Q That would have at least some effect on the river below the plant?

A At the time the plant was operating, yes.

Q At line 8 of page 10, beginning there, I guess line 7, you speak generally about certain increases in generating capability and turbine discharge and so forth.

In terms of a percentage increase at Stepehenson are both of the increases you mention here, that is in plant capacity and discharge, is that percentage somewhere around 37 percent?

A Yes; I would agree it is in that magnitude.

Q We have been over this before. But at line 24 of page 10 in reference to what you say there, you would agree all the physical construction of the fourth unit at Stephenson was done after August 26, 1936?

A Physical construction and installation of the

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generator. I have to exclude the work initially planned and installed in anticipation of construction of that unit when the plant was initially built.

Q. At line 44, moving now to discussion of the Rocky River plant as opposed to the Stephenson plant, you talk about minor revisions to the two pumps.

Will you describe the changes made on the two pumps at Rock River?

A. Generally those revisions were in the form of an addition of Phase reversal switching and the necessary rewiring to the motor to allow the motor to -- to allow the generator to operate in the opposite direction as the meter -- excuse me, allow the meter to operate in the opposite direction as the generator.

Q. Let me understand what was there when the two units were just pumps and when they were adjusted in -- was it 1952?

A. Yes.

Q. -- when they were changed to be made to work, in addition to working as pumps, to be reversed so they could work as generators, did something have to be added, or was it just that the essential machinery that was there could be used just by making minor adjustments and they could be used as generators?

A. That is correct. The pump itself, when rotated in

Q In terms of percentage increase we have to really refer to how much you had, how much you add.

A 7 over 24 -- 7 over 25, over the original.

Q All right.

Was there an increase in cfs discharge at Rocky River after the two pumps were converted?

A Yes.

Q Can you tell us in cfs figures what that increase was?

A I believe it is in my testimony. I would have to look for the figure.

Q I am sorry. I don't remember it in your testimony. That is why we asked.

A Yes. On page 5 lines 28 and 29, I said "The pumps as generators discharge at a rate of 230 cfs each."

Q So you had an increase of 460 cubic feet per second discharge after the two pumps were --

A Generally, yes.

Q Did CL&P or its predecessor file a declaration of intention under Section 23(b) of the Federal Power Act before converting the two pumps at Rocky River in 1952?

A I don't know whether they did or not.

Q Could you find the answer to that question and tell us at a later time?

MR. KNICKERBOCKER: Your Honor, I considered the request of the Staff before for similar information in the case

of the Stevenson Project.

This witness in the case both of Stevenson and Rocky River has indicated he does not know whether or not such certificates were filed. It seems to me if the FPC wishes to find out its access to its own files is certainly equal to our access to this data. I believe in either case the FPC is the proper party to search its own files.

PRESIDING JUDGE: How much problem is involved?

MR. TELLEEN: It is the belief of the FPC both as to the Rocky River plant and the Stevenson plant that no declarations of intention under 23 (b) were filed before physical construction took place.

PRESIDING JUDGE: May we accept that for the record, unless youfind something to the contrary? Or do you want something more substantial than that?

Is your statement based on a search of the FPC files?

MR. TELLEEN: Not based on a specific search as to that. It is based on a perceived awareness of the FPC files as to these two projects.

PRESIDING JUDGE: How much problem would it be to go to the FPC files and ascertain this one way or the other?

MR. TELLEEN: We could do that, Your Honor. We thought we could get, shall I say, verification of the non-existence of these two declarations of intention from Connecticut Light and Power.

PRESIDING JUDGE: It seems to me we are arguing about who does what. Since somebody has to do something, if it does not pose too much of a problem why do you not do it, and make a statement for the record tomorrow, if you can, or have someone make the search? Then we will know without imposing a burden particularly on anybody.

MR. TELLEEN: Would that be sufficient as to the issue of non-existence of these two declarations? Would that be sufficient for your Honor?

PRESIDING JUDGE: I would say if counsel for the applicant wants you to take the stand and testify you can do that. Or if they have a contrary knowledge they can produce it.

Would that be satisfactory?

MR. TELLEEN: All right, Your Honor. We will make such a search. I am not sure that we can have that information by tomorrow.

PRESIDING JUDGE: Let me know tomorrow.

MR. KNICKERBOCKER: That would be in the case of both facilities, Stevenson and Rocky River?

PRESIDING JUDGE: Yes.

MR. TELLEEN: Would it be appropriate for Connecticut Light and Power to make a similar search of their records?

PRESIDING JUDGE: Only if they want to. If they do not I assume your statement will stand.

MR. TELLEEN: Thank you, Your Honor. Very well.

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BEFORE THE

FEDERAL POWER COMMISSION

In the Matter of:	:	Project Nos. 2576
	:	2604
THE CONNECTICUT POWER AND LIGHT COMPANY	:	2632
	:	2646

Hearing Room F
Federal Power Commission
825 North Capitol Street
Washington, D. C.
Wednesday, November 20, 1974

The above-entitled matter came on for further hearing, pursuant to recess, at 10:00 a.m.

BEFORE:

ISRAEL CONVISSER, Presiding Administrative Law Judge

APPEARANCES:

(As heretofore noted:)

ADDITIONAL APPEARANCES:

JAMES R. MC INTOSH and
ROBERT P. KNICKERBOCKER, Day, Berry and Howard, One Constitution Plaza, Hartford, Connecticut 06103, appearing on behalf of The Connecticut Light and Power Company

OLGA BOIKESS, Galland, Kharasch, Calkins & Brown, 1054 - 31st Street, N. W., Washington, D. C. 20007, appearing on behalf of Candlewood Lake Authority

FREDERICK BENEDIKT, R. D. #1, Route 39, New Fairfield, Connecticut, appearing on behalf of Candlewood Lake Defense Associates

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water-logged logs, and other such occurrences as occurred in the seven-foot drawdown, is it possible?

A. I think the best answer to that is that to the extent that there still exists some of this material on the bottom of the lake a drawdown of that magnitude would cause that material also to rise.

Q. There might be other results of even greater severity, such as for example more of the lake bottoom?

A. There certainly would be at a greater drawdown.

Q. In your rebuttal testimony, on page 2, line 29, you talk about the recreational use of the lake. Do you mean by that the use by the residents of Candlewood Lake, residents of the five towns, and other people?

A. Yes.

MS. BOIKESS: Those are my questions.

PRESIDING JUDGE: What do you want to do about these clippings? Do you need them now that you have the testimony in the record?

MS. BOIKESS: Mr. Ferreira has confirmed the material in the clippings, and therefore, I think they might be helpful to someone reading the record. How about just to the extent of their being offered that he has referred to the materials therein?

PRESIDING JUDGE: I have another problem.

You know we discussed at our conference before this

hearing began the relevance of this material on the jurisdictional issue.

Do you see any particular relevance of the testimony you have just adduced to the question of jurisdiction that we are concerned with here?

MS. BORKNESS: Yes, your Honor.

The testimony of the FPC hypothesizes two situations -- a several-day drawdown of the lake, which would be about five or six feet, perhaps more, and a 30-foot drawdown of the lake.

The testimony of the C L & P is that there would be no practical reason they would do this, possibly because of the recreational purposes of the lake.

My purpose in introducing this is to show C L & P has a great deal more to consider than the convenience of some fishermen and fishing boats and the general convenience of what might be commonly thought of in recreational use, in deciding whether to run the plants at full speed for several days, or run its plants I think for 39 days full speed that it would take to draw the lake down 30 feet. I think it's very likely in considering the result of such operation.

Q How does that affect the question of jurisdiction?

MS. BORKNESS: I think the posture of the case

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is that the FPC hypothesizes this operation of the Rocky River plant as a way of showing possible effect on downstream navigation, and that if it were shown not only is it impracticable for recreational reasons but impracticable from the point of view of what the C L & P could do in relation to the residents of the area, I think would be very significant in showing there was no reasonable or possible likelihood of such operation and that the hypothesis has no relevance to this case.

PRESIDING JUDGE: would in your opinion the Federal Power Commision have jurisdiction if there were an adverse impact on Candlewood Lake? Or, contrariwise, would it have no jurisdiction if there were no such effect on Candlewood Lake, assuming that no other factors existed?

MS. BOIRESS: I don't think the impact on Candlewood Lake is what is relevant. I think the question was whether the drawdown of Candlewood Lake might through the operation of the Rocky River plant possibly have some effect downstream. I think one of the points the Federal Power Commission makes is that it is possible that C L & P would drawdown Candlewood Lake to the extent of 50 feet, and thereby affect the downstream navigability of the river.

PRESIDING JUDGE: I did not detect in any of your

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questions or the material from which you questioned had anything relating to the effect downstream. You were showing what happens to Candlewood Lake.

All right, Mr. Telleen, do you have something to contribute on this point?

MR. TELLEEN: I want to be sure the record reflects that any discussion by Ms. Boikess as to what the FPC Staff may have said or been trying to say was entirely her account based on her reading of that testimony.

PRESIDING JUDGE: What can you tell me about the jurisctional issues? I understand that you do not accept responsibility for her attributions.

MR. TELLEEN: Exactly right, your Honor.

PRESIDING JUDGE: Do you have any comments on the questions I raised as to the relevance of impact on Candlewood Lake to the jurisdictional issue?

MR. TELLEEN: I think, your Honor, it would have -- at this point, without having studied it or gone into it, I think it would have very little relevance, other than what effect the drawdown would have on the lake itself.

PRESIDING JUDGE: Thank you.

Mr. Kosloff, do you have any comment on jurisdiction?

MR. KOSLOFF: Vis-a-vis this testimony?

PRESIDING JUDGE: This discussion, yes.

MR. KOSLOFF: Personally, I do not see the

relevance of whether it would or would not be a particular hardship to the residents of ~~the~~ Candlewood Lake, is that affects jurisdiction here.

The question in my mind is only whether a drawdown which would affect downstream users would be possible, not whether it would be practical.

PRESIDING JUDGE: Mr. McIntosh, is there anything you want to add to my questions? Have you represented your position fully?

MR. MC INTOSH: No, sir.

Our position is that -the line of questions and the answers have no relevancy to the proceeding, your Honor. I think we agree with Ms. Bolkest on that point.

We disagree with Mr. Kosloff that what is possible is a basis for jurisdiction. I suppose anything is possible.

What we are trying to show in at least part of this case is that although theoretically physically possible, certain things are improbable and have not occurred and will not occur.

I think the questions we have just heard, and the answers we heard from the witness, demonstrate what is physically possible, lowering this lake by such dramatic amount, has in fact never been done, and if ever done it was approached it apparently would have somewhat catastrophic results.

there is no likelihood it will ever be done.

If this is a basis for jurisdiction we question that there is jurisdiction.

My question went to the use of the newspaper reports themselves as evidence in this proceeding I agree that there is some relevance to the questions asked and the answers that were given.

PRESIDING JUDGE: Do you object to the introduction of these clippings as an exhibit?

MR. MC INTOSH: Yes, your Honor. I remain unconvinced that they are necessary as part of the case and that they have been shown to be relevant and material as exhibits. Certainly they have been useful to counsel in cross-examining this witness. I will not deny that. But I for the moment will not agree they are properly admissible as evidence in this proceeding. I don't think they have been properly qualified.

I object to their introduction in evidence.

PRESIDING JUDGE: The relevance you have already conceded, it seems to me. And in view of Mr. Ferreira's acquiescence in what these reports indicate or show, it seems to me we do not have any real problem with respect to receiving the material as an exhibit.

MR. MC INTOSH: May I be heard, your Honor, on this? I think we may have difficulties in future as

this hearing goes forward, with documentary evidence. I would like at this point to perhaps get some guidance on what your Honor would admit in evidence and what you would feel is incompetent to come in as evidence.

I tried to study the applicable provisions of the rules of practice. I have trouble with Section 1.26(c) which I believe deals with this problem of documentary evidence. I believe this is documentary evidence; perhaps it is not, perhaps it is some other form of evidence. Whether this material has been properly qualified to stand for or support the truth of what is contained therein gives me trouble.

PRESIDING JUDGE: Would you read to me what 1.26(c) says?

MS. BOIKESS: I might help by limiting the purpose for which I would introduce the documents.

PRESIDING JUDGE: Just let me get this point. May I hear that, Mr. McIntosh?

Mr. Mc Intosh: I asked you to read the section, but since I now have it before me, it will be unnecessary for you to do so. But I am afraid I do not see the points you are making in connection with this section.

MR. MC INTOSH: Your Honor, this is where I hoped you would give me some guidance. It seems to me Section 1.26(c), since we are dealing with documentary evidence, is

divided into two parts, one of which speaks of relevant and material matter. For the moment I do not concede that this material is in itself relevant and material. But assuming for the moment that it is, this section speaks of receiving it in evidence "if it is properly authenticated," and I am not certain that I at least am satisfied here that is proper authentication. And the only way it would be received in evidence is if it is read into the record, and, I take it, read by a witness. Although I am not certain of the Commission's procedure on reading material into the record.

That is one method for getting documentary evidence in the record.

The second, as I read this, is that a true copy of the material is presented to your Honor in proper form. I am not familiar with what a "true copy" and "proper form" of a newspaper article might be. And it says that "shall be received in evidence provided that copies of it are delivered to all attorneys, who are afforded an opportunity to examine the entire document" which I don't believe we have had, your Honor.

I do not really question this material per se. I am afraid I am opening the door, though, if I did not object to this, to a great amount of material that might come in that would not meet these standards.

PRESIDING JUDGE: I am going to hear from Mr. Boikess in a minute, to see if we cannot dispose of the immediate problem.

I would say in that connection that (a) apparently these documents came from your company's files;

(b) Testimony confirms the contents of these articles.

So I do not see any real problem in admitting into evidence those newspaper clippings. It may be you will have some situations where authentication may be a problem. But I think we will have to wait until we get to those cases, to decide what to do.

You are able now to anticipate some of the problems that lie ahead. Since you are asking for guidance, I will be glad to do what thinking I can about it. But for the immediate problem I do not see that we need to be too much disturbed.

MR. MC INTOSH: Your Honor, I think these materials perhaps are distinguishable from other material which may or may not be sought to be introduced at a later date.

I do not grant for the purposes of over this tender that materials from the company's files are necessarily accurate or authentic. I think we will find the company's files are files with a number of materials particularly newspaper articles, which are themselves inaccurate but

A. I don't know the answer to that. That is outside my area of expertise.

MR. BENEDIKT: That is all I want to ask Mr. Ferreira.

PRESIDING JUDGE: Thank you, Mr. Benedikt.

PRESIDING JUDGE: Mr. Knickerbocker.

MR. KNICKERBOCKER: Yes, your Honor.

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REDIRECT EXAMINATION

BY MR. KNICKERBOCKER:

Q. Referring to your direct testimony at page 8, line 35, Mr. Telleen yesterday asked you who the consulting engineers were who are referred to in this line, and what their relationship to the company is.

(A) Q. Do you have any more information on this point now?

A. Well, I did review my testimony to refresh myself in this instance. I believe in my testimony yesterday I indicated the consulting engineers were employees of C,L,&,P.

(A) Actually, C,L,&,P did hire United Engineers and Constructors. That is the reference I was making, and they are independent contractors, not directly employees of the company.

Q. On page 19 of your direct testimony, again, at lines 5-7, you now took the addition of the fourth

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A Yes; to the extent that that system operates as an integral part of the Northeast Utilities System, yes.

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

Is there any further redirect?

MR. KNICKERBOCKER: No, your Honor.

PRESIDING JUDGE: The witness may step down.

Thank you very much, sir.

(Witness excused.)

MR. TELLEEN: YourHonor, yesterday, in terms of Mr. Ferreira's cross-examination two points came up concerning the Stevenson plant and the Rocky River plant and whether or not declarations of intention as to those two plants, as to certain times, had been filed or not.

I am prepared to report my findings.

PRESIDING JUDGE: Will you make a statement for the record?

MR. TELLEEN: Yes. I have checked the Commission records, with the aid of other staff members, and did not find declaration of intention filings by Connecticut Light and Power Company or its predecessor as to the Stevenson plant project nor as to the Rocky River project,

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after August 16, 1935.

PRESIDING JUDGE: Mr. McIntosh.

MR. MC INTOSH: Your Honor, we tried as best we could in the short time available to search the company's files. We also find no evidence that such declarations were filed.

PRESIDING JUDGE: Thank you very much.

You may call your next witness.

MR. MC INTOSH: Our next witness is Lyle M. Thorpe.

Whereupon,

LYLE M.THORPE

was called as a witness, and having first been duly sworn, took the stand and testified as follows:

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MR. MC INTOSH: Your Honor, before I make Mr. Thorpe available for cross-examination I respectfully request that we go off the record for a brief period of time to enable me to show to your Honor, to counsel, to anyone else interested, a series of photographs taken by Mr. Thorpe. I would offer them to be viewed in the same spirit of which Mr. Telleen spoke before, to assist those interested in reviewing this record to understand the character of the river.

There are about, I believe, ten slides here, taken by the witness, which would help in understanding the character of the river.

PRESIDING JUDGE: Very well.

We will do that now. We will go off the record, and counsel may approach the Bench, and we will look at these pictures.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

Mr. McIntosh: Your Honor, the witness is available for cross-examination.

PRESIDING JUDGE: Mr. Tellen.

CROSS EXAMINATION

BY MR. TELLEN:

Q As I recall, Mr. Thorpe, you filed just direct testimony, no rebuttal?

A That is true.

Q Referring to line 3 of page 3, you refer to the width of the river at Lovers Leap, and at Milford. How wide is the river in feet at Lovers Leap?

A Through the Gorge -- this is an estimate, I as near measured it -- I would judge it as approximately 60 feet at the narrow point.

Q That is the "gorge" you refer to?

A Yes.

Q At line 11, you talk about the "pool-rapid" nature of the channel.

By that are you referring to the complete

length of the Housatonic River channel, in the sense that there are rapids followed by pools, and rapids, and so forth?

A. In my testimony, I tried to make it clear that it was describing the general nature of the river channel from Falls Village down to Lake Housatonic.

Q. By the term "pool-rapid," you are referring to long pools where the river is essentially the same elevation with then falls and rapids, so forth?

A. That is correct.

Q. Are any of the pools to which you refer as much as a mile long?

A. Natural pools? None that I know of.

Q. You are saying that the pool might extend for up to a mile, then a falls, or maybe not even up to a mile?

A. No. I am now recalling a pool that I believe to be a quarter of a mile long, at the same level.

Q. Are you familiar with the river just off the Rocky River plant?

A. Yes.

Q. The elevation of the river just above the Rocky River plant is not affected at all, is it, by any dam? I guess it would be the Shepaug Dam, that elevation is not affected by the Shepaug Dam, is it?

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A. It is my impression that it is affected. I am not sure.

Q. In your field studies to which you referred in relation to your work as a biologist did you make use of U. S. topographical maps, in the sense of giving you direction as to where you were, guiding you in terms of physical characteristics, what-not?

A. Do you mean specifically when I took these photographs?

Q. No. Generally.

A. All my life, yes.

Q. Specifically, when you took these pictures?

A. Many times, yes. Not when I took these pictures.

Q. At line 40, page 3, you talk of "small boat traffic and canoe traffic," and you talk of such traffic being possible during that brief period during the decline of the spring runoff.

Is it your testimony such passage in small boats or canoes is only possible as the spring runoff subsides, and at no other time of the year?

A. No, it is not. I am well aware that small boats on an adventure basis can work their way down through this river at other times of the year, and do.

It is my point that you could not use this river for serious navigation at other times.

Q. At what time of the year is the river's flow the lowest, on average?

A. Without reference to the flow data, I would think late August through September.

Q. Does the flow of the river decline from a high -- say the spring runoff, down to that low? I mean, from the spring runoff to September, the river is getting progressively lower in terms of its elevation?

A. Generally, this would be true, although it is a fast-runoff watershed and any heavy rain shoves the flow up.

Q. At page 4, line 35, and preceding that point, you talk of "masting" and "King's Mast Trees.

Were British ships of the line built at any point in history at any point along Housatonic River?

A. I am not aware that they were.

Q. Are you aware of whether or not boats of other sizes were built at any point along the Housatonic at any time in the past?

A. I understand there was a certain amount of boat-building in the lower river, yes.

Q. At what point or points?

A. I believe from Shelton and below.

Q. Which would include Derby?

A. Yes.

Q You have no idea of the size of these boats?

A That were built? I have --

Q As a guide, were they smaller than British ships of the line?

A Yes, they were.

Q Would smaller boats require masts shorter than 80 feet in length?

A. They would.

MR. KEHLEEN: I have no more questions on cross-examination.

PRESIDING JUDGE: I am not sure that I understand the reference to "ships of the line." Do youhave any idea how big a ship of the line would be?

THE WITNESS: I used the term to describe the first-line war vessels of the British Navy. I believe their so-called 40-gun ships were some 260 feet in length.

PRESIDING JUDGE: Have you any idea by reference to that how big the ships were that to your knowledge were built along the Housatonic?

THE WITNESS: I tried to make clear that it was only a very superficial knowledge that I had that boats, ships, had been built in the Lower Housatonic.

It is my impression that they were small vessels, engaged primarily in coastal trade. But I am not a historian, and my testimony on this point should not be

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very valuable.

PRESIDING JUDGE: Thank you.

Mr Kosloff, do you have anything?

MR. KOSLOFF: Yes, your Honor.

May I refer to the photographs which were introduced?

MR. MC INTOSH: I believe, your Honor, Mr. Kosloff misspoke. The photographs taken by this witness were not introduced in evidence. They were circulated for information and clarification purposes, only.

MR. KOSLOFF: Just with reference to the photographs that were taken, let me just ask this:

BY MR. KOSLOFF:

Q In what reaches of the Housatonic River were these photographs taken? Were they taken north of Bull's Bridge, for the most xxt?

A They were -- the original set, of which some are missing, were taken from Canaan to Shelton, at points along the river where I had some previous knowledge that I could get a picture to illustrate the nature of the channel.

Q At the risk of having to go through each photograph again individually, it was my understanding that for the most part these photographs were taken approximately 20 miles north, that is upstream, of Bull's Bridge; is that correct, with the exception of I believe

one or two photographs taken in and around Bull's Bridge?

A. I believe I have no photographs taken north of the Great Falls.

PRESIDING JUDGE: Where is Great Falls?

THE WITNESS: At Falls Village. Falls Village. I am not sure of the river mile. I am not trying to evade the question. I just don't know the river mile at Falls Village.

BY MR. KOSLOFF:

Q. For my purpose it would be sufficient if you told me whether or not the photographs were taken in the general vicinity, that is within a mile or two, of Falls Village, that is some of those photographs, and if the majority of the other photographs were taken in the area of the Cornwall Bridge area. Is that right?

A. There were two pictures taken immediately at Falls Village, at the bridge that crosses the river there. One looked upstream, one looked downstream.

There was a photograph taken below the power plant at Falls Village, which is, you know, 600 or 700 yards below the point of these previously referred-to pictures.

Q. What was the most southerly photograph, the one most downstream, of all the photographs you have taken?

A. I believe, as I recall [illegible] and

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I want to make clear these are not all of the pictures I took in the series, and I only recently took learned the ones you were to see -- I believe the most southerly one is at Bull's Bridge.

Q. Those photographs do not purport to describe the character of the river any further south than the particular photograph at Bull's Bridge?

A. These pictures do not. I did take pictures further south than Falls Village.

MR. KOSLOFF: Thank you.

PRESIDING JUDGE: (Mrs.) Boikess, do you have anything?

MS. BOIKESS: No.

PRESIDING JUDGE: All right. Mr. Benedikt, do you have something?

MR. BENEDIKT: Yes, your Honor.

BY MR. BENEDIKT:

Q. On page 4, starting at line 10 there is a statement "that the river was ever or could ever have been used for log drives is highly unlikely."

Is that your belief?

A. That is my belief.

Q. Does that include the tributaries of the river: the Naugatuck, the Little River, the Ten Mile River, the tributaries?

A. Are we not straying from my testimony?

I had not thought of logging on those tributaries.

You say the Naugatuck River? I think it would have been possible to log there under certain circumstances.

Q Then you would not dispute it if I said that I have a Mr. Frederick Warner, a professional engineeer, who states that his grandfather told him that between 1807 and 1824 he drew logs down the Little and Naugatuck Rivers to Derby? Would you dispute that?

MR. MC INTOSH: I think that is improper question. I don't think the witness can comment on what someone else's grandfather told him.

MR. BENEDIKT: He is a professional engineer.

PRESIDING JUDGE: Let me try to rephrase the question for you.

At any time, to your knowledge, was there any logging down?

What were you referring to? The tributaries?

MR. BENEDIKT: Yes, the tributaries.

PRESIDING JUDGE: You have already said, I believe, that at least on one, the Naugatuck, logging is possible; is that correct?

THE WITNESS: I said, under certain circumstances.

PRESIDING JUDGE: Would you say that at any time in the past to your knowledge, logging was possible on any

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of the other tributaries?

THE WITNESS: I want to make clear what I are different. regard as possible and what I regard as probable, the difference.

I have had some experience handling logs myself, and some experience on streams. I am interested in these things.

I find that on smaller streams such as the Naugatuck, which Mr. Benedikt mentioned, log drives were possible just as they were possible on small streams up in the Central Adirondacks, but wherever this happened a knowledgeable observer could usually find the artifacts long after the drives were over.

The typical way logs were driven on these small streams was to build a dam, the logs were rolled in and ponded.

When the spring freshet was at about the right stage they blew up or ruptured the dam and tried to ride the crest with their logs.

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MR. TILLEN: Excuse me. Is Mr. Thorpe qualified to expound on logging techniques and practices?

PRESIDING JUDGE: I will let him continue. Then we can talk about his qualifications.

THE WITNESS: I am trying to imply, on the Naugatuck, that I believe a stream of this size and of its general character, with which I am familiar, could have had log drives. I know of no account of this. I have never walked this stream to know if there are any remnants or artifacts of past log drives.

PRESIDING JUDGE: How long after the fact would these artifacts continue to be available or found?

THE WITNESS: Some of them for many periods of years.

PRESIDING JUDGE: 100 years?

THE WITNESS: Yes.

PRESIDING JUDGE: What would these artifacts consist of?

THE WITNESS: The basic structures logging crews use to bring logs down rivers, and small streams, were rock-filled log cribs. They used those as their basic supporting structures for their dams. They used them to carry logs around a bend where logs could jam.

Somewhere on the stream they had to have a place to catch the logs, and this usually meant a natural still-water or another dam, a pond.

They used log booms to capture and hold their logs until

they could dispose of them. And they usually drilled big boulders or ledges; you will find "nail-ups."

PRESIDING JUDGE: To your knowledge has any search been made in the areas of these rivers for artifacts?

THE WITNESS: To my knowledge they have not.

PRESIDING JUDGE: No search has been made?

MR. KNICKERBOCKER: Does Your Honor include the Housatonic in "these rivers"?

PRESIDING JUDGE: Yes.

THE WITNESS: I know of no search that has been made for such artifacts. There may have been some searches. I am not aware of them.

PRESIDING JUDGE: In view of Mr. Tellean's concern, do you represent yourself as having any special knowledge with respect to logging? You spoke as if you had. But perhaps the record should show it.

THE WITNESS: I would not want to classify myself as a junior Paul Bunyan. However, from the time I was in my teens I have worked off and on with logs. My father did some lumbering and some of my relatives did, and I have done some myself.

I am not a lumberjack, but I am familiar with the way logs are cut, moved, sawed and handled.

PRESIDING JUDGE: Despite your disclaimer, would you say you have the bunions to prove it?

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THE WITNESS: Yes. Right across there.

(Laughter)

BY MR. TELLEEN:

Q You speak carefully about working with logs, movement, so forth. What percentage of your work with logs and their movement had to do with running of logs on rivers?

A None.

MR. TELLEEN: Thank you.

PRESIDING JUDGE: I am sorry, this was Mr. Benedikt's operation.

MR. TELLEEN: I am sorry.

BY MR. BENEDIKT:

Q Between line 27 and line 41 on page 4 you mention frequently that it was unusable for the flotation of either sawlogs or for masting logs. Is that correct?

A That is what I said.

Q Have you ever inspected the town records of Cornwall?

A No.

Q Would you have any reason to dispute the Town Clerk, (at) least the former Town Clerk, a Mrs. Kay Phenn --

PRESIDING JUDGE: Just a moment. You may testify to what you found if you looked at the records or spoke to the Clerk. Do not ask this witness to confirm something that you read or say.

MR. BENEDIKT: I see. All right.

BY MR. BENEDIKT:

Q You have not inspected the town records of Cornwall. Are there other things used relating to boats in the past, other than just masts, I mean in the form of wood? Would there not be many other, much shorter logs, of various hard woods -- chestnut, maple, oak, hickory, those things -- used for various parts of a ship?

A Yes.

Q If a mast could float down the river then the shorter logs also could?

A I have not agreed that the masts floated down the river.

Q No. I am placing the question: If a mast could float down the river then also would it be possible for the shorter logs used for other types of lumber aboard a ship also to float down the river?

MR. KNICKERBOCKER: It seems to me, Your Honor, there is no foundation for that question.

PRESIDING JUDGE: Let me ask you, Mr. Thorpe, can you say whether there is any difference in the types of logs used for the different parts of the vessel that would make it more difficult for logs for other purposes to float down the river than for masts?

THE WITNESS: The long timbers, the masts and the yard

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timbers, would be the most difficult.

In general hard woods were not amenable to log drives. They did not float well enough.

I think he wanted me to agree that a short timber would float down the Housatonic River. This I would agree to, because there are the trunks of old, dead trees going down the river all the time.

This does not imply the river is amenable to a commercial logging operation.

PRESIDING JUDGE: Thank you.

BY MR. BEUDDUT:

Q That is what I meant.

On the matter of fish, have you any familiarity with fish life in general?

A In general I do have.

Q Did there not used to exist prior to the construction of the dams shad runs as far up as Lover's Leap?

A I am not sure. I am generally familiar with the reports and records of the old so-called Connecticut Fish Commission which preceded the formation of the Connecticut State Board of Fisheries and Game, so I have a general knowledge of what those people were writing about fishery resources prior to 1900, and subsequent.

In my opinion there was a smallish run of shad in the Housatonic River. I am not sure what its terminus was.

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I think, from some knowledge of shad behavior, that certainly Lover's Leap would have been the real upper reach, and I think very few fish would have reached there.

Q Do you have any awareness of old Indian treaties made concerning fishing rights of the Indians in that area?

A I have no such knowledge.

Q In the lower part of the river in the salt-water portion below the dams there, to be more specific, have you heard of an oyster industry being revived, a seed oyster industry?

A I am aware that the oyster industry is getting back on its feet somewhat from a devastating explosion of starfish some years ago.

Q Do you have any idea of the extent of it?

A Of the recovery?

Q Yes.

A In terms of production, bushels per year? I have none.

Q Are you aware of the resurgence of other marine fish such as mackerel or snappers, striped bass, whiting, and I think something called weakfish or sea trout, and bluefish, that they also have come up to the point where they are impeded near Shelton and Derby? Have you heard of that?

A Well, essentially all my life I have heard of that, yes.

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Q I mean they are coming back in big numbers.

A If you want me to admit that I know these species you have named invade the Housatonic estuary in the tidal portion, of course I will agree to that.

Q Were you a co-author of the revised application that is referred to as Revised Exhibit R combined with new Exhibit S, published December 1970? Were you a co-author of that?

A I will answer it if you will permit a minor correction. I am not sure those exhibits have authorship. If you want me to agree I worked on these exhibits I will.

MR. BENEDIKT: Okay. That is all.

PRESIDING JUDGE: Are these the same --

MR. BENEDIKT: This is part of the application itself.

PRESIDING JUDGE: To which you referred before.

MR. BENEDIKT: Yes.

MR. KNICKERBOCKER: Is it clear that is the Rocky River application?

MR. BENEDIKT: Yes.

You and Mr. Don Ward?

THE WITNESS: That is correct.

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REDIRECT EXAMINATION

BY MR. MCINTOSH:

Q I would like to ask the witness whether he is aware of the existence of any of these artifacts of the type he

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ke my attention because I am

interested in these matters and I would see them. I see them easily on a stretch of the St. Regis River in the Adirondacks of New York, where I fish frequently.

I have seen them on the Androscoggin, the Merrimac and perhaps others I do not remember the names of.

PRESIDING JUDGE: Thank you.

Mr. Tellen, anything more?

RECROSS-EXAMINATION

BY MR. TELLEN:

Q You said that you personally had never been involved in running logs on a river. But you talked generally about logging practice, building crib dams, so forth.

Am I correct that that suggests that you have studied logging practices, at least to a degree, read about them?

A I was drawing on many varied experiences -- personal logging experience while I was still living at home, practices my father did.

We did transport logs by water, but not on a stream. We transported them on a lake to get them to a railroad siding.

I have land of my own in Connecticut and I have logged that.

Q So your experience when you talked of logging practice and technique, you drew on not necessarily your experience but the experience of others which involved the

time around say 1900?

A Yes. If you will permit me to go on a little bit -- you know, an old man's loquaciousness -- in 1936 the decision was made to do stream improvement work on some of the streams in Connecticut, and I was sent to the Adirondacks to study some of the structures which the loggers used and which we proposed to adopt for stream improvement purposes in the streams of Connecticut. So in company with a man knowledgeable about it we saw many of those structures, and I learned a great deal in that experience and subsequently adapted these devices and structures to certain streams in Connecticut.

Q You viewed these structures yourself and learned of those practices as to other streams in the Northeast, around 1936, you said?

A This particular experience: I think my first logging was done about 1929 or '30.

MR. TEHLEN: I have no more questions, Your Honor.

PRESIDING JUDGE: Mr. Kosloff.

BY MR. KOSKOFF:

Q I recognize you do not hold yourself out as an expert in log driving or log flotation.

Is it not true you would expect rock crib artifacts to which you alluded would be more likely to be found on tributary streams or headwater reaches of main streams where

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there was a relatively insignificant flow, rather than in the main stream, since if there were any kind of significant flow you would expect those artifacts would be washed into the main stream and carried away?

A Yes. I agree with your general proposition.

MR. ROSLOFF: Thank you.

PRESIDING JUDGE: Mr. Doikess?

MR. DOIKESS: No questions.

PRESIDING JUDGE: Mr. Benedikt.

MR. BENEDIKT: No further questions.

MR. MCINTOSH: Your Honor.

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FURTHER REDIRECT EXAMINATION

BY MR. MCINTOSH:

Q Mr. Thorpe, there was a suggestion I think in questions asked you a moment ago by Mr. Tallaen that the artifacts you were discussing were the technology of logging in the 1930's and that perhaps logging at an earlier time was carried on with techniques that would not have left such artifacts. Do you want to clarify this point at all?

A I did not mean to date such artifacts as in the '30's, because they were using the same techniques 100 years ago. This was the basic structure of log drives, rock-filled cribs, and log booms to hold logs in some impoundment until they could get them out of the water.

Q Are you suggesting that 100 years has some

particular significance? Is it perhaps older than that, shorter than that? Why did you pick 100 years?

A Just to have a long time span; the life of a heavy iron bolt or a pile of heavy rocks.

Q You are suggesting you would still find the artifacts after at least 100 years?

A Indeed.

MR. MCINTOSH: Thank you.

MR. COLLIER: Your Honor.

PRESIDING JUDGE: The ball is in your field.

FURTHER RECROSS-EXAMINATION

BY MR. COLLIER:

Q By 100 years you are speaking of say 1874?

A Yes.

MR. COLLIER: Thank you.

PRESIDING JUDGE: Is that it?

Thank you, Mr. Thorpe. You may step down.

(Witness excused)

PRESIDING JUDGE: Shall we start with another witness? We have only about twenty minutes. What is your pleasure? Do you have much cross?

You have one more witness?

MR. MCINTOSH: We have Professor Collier, Your Honor.

MR. COLLIER: I imagine there is going to be a great deal of cross-examination, Your Honor.

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MR. BENEDIKT: I can take myself out right now on Professor Collier. I do not intend to ask him questions. I believe there is a considerable amount --

PRESIDING JUDGE: Wait, Mr. Benedikt. Are you making a statement with respect to Professor Collier's testimony?

MR. BENEDIKT: Just to cut time here.

PRESIDING JUDGE: Well, don't make any statement. If you want to ask him questions on cross-examination you may do so. If you have any comments to make on his testimony you can put it in your brief. But let's not take the time for statements.

I am at your pleasure. I will be here for another twenty minutes. If we can accomplish something with Professor Collier in that time I am happy to stay with it.

MR. KOSLOFF: I do not plan to bombard Mr. Collier with a great many questions on cross.

PRESIDING JUDGE: Mr. Telleen, do you have fairly extensive cross-examination?

MR. TELLEEN: I would not call it that much greater than we did with Mr. Ferreira. Perhaps we could get something started. I would be glad to start it.

PRESIDING JUDGE: Why don't we proceed with Professor Collier.

CHRISTOPHER COLLIER

was called as a witness, and after having been first duly sworn, was examined and testified as follows:

MR. MERRICK: Professor Collier is available for cross-examination.

PRESIDING JUDGE: Mr. Tellison.

MR. [illegible]

CROSS-EXAMINATION

BY MR. TELLISON:

Q Will you turn to page 3 of your direct testimony.

A Yes.

Q At line 9 you use the term "prior to 1870."

A Yes.

Q Will you explain that term? How many of the items to which you refer dealt with say the period 1832-1870?

A The 150 printed items deal with the whole Colonial period from the ~~National~~ National period up to 1870. Without making an analysis I can't tell you how many of them dealt with the period after 1832.

Q You have no way of knowing how many dealt with the period prior to 1830?

A I have a way to know it. It would take time. Many of these documents dealt with the period before and after 1832.

Q You have no way to make an estimate at this time?

A No.

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Q On line 15 you speak of examination of relevant sections of certain newspapers.

What sections in your opinion would not need to be examined?

A Political news, political columns, I did not look at, "advises" as they were called.

These newspapers were usually four, six, occasionally eight pages. They were weeklies. My wife and I scanned everyone of them from cover to cover and read the sections that appeared might bear fruit in discovering navigation on the Housatonic.

Q You sometimes read advertisements, sometimes not?

A I read advertisements. Some of it shows up perhaps in my testimony, at least implicitly. There were ads for cherry boards, for instance, that were brought from Albany down the Hudson; that kind of thing.

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Q At line 16, I guess 15 and 16, you speak of six 18th and 19th-Century newspapers of the Upper Housatonic Valley. Were the six newspapers in towns on the river itself or in the valley generally?

A They are listed in the bibliography that is an exhibit. Do you want me to speak of them also?

Q For the record, yes. It might be difficult to know just where Litchfield is, for example.

A Litchfield is not on the Housatonic.

Q How far is it from the Housatonic?

A I suppose maybe where the newspaper would have been published was maybe 12 miles.

Q The other newspaper --

A There were no other newspapers in Litchfield County at that time.

Q The Litchfield newspaper was published in a town 12 miles from the river bank? That is the one you read?

A Yes. For Berkshire County I read newspapers from Pittsfield and other towns right on the river.

Q Are those the six papers you refer to here?

A Yes. I am looking for the list of six papers, I will then give you the towns. I did not select these newspapers. I read every newspaper that was published at that time.

MR. KNICKERBOCKER: It might be of help to note that

[illegible] that is on page 10 of Mr. Collier's exhibit, Your Honor.

THE WITNESS: I have two Danbury newspapers.

BY MR. MILLER:

Q Where is Danbury in relation to the Housatonic?

A At that time it was slightly west of the Housatonic.

Q And Portland is --

A It is now on the Housatonic.

Q Plainfield is?

A Plainfield is on the Housatonic.

Those were the only available newspapers. There were none others.

Q You said the phrase "including every issue of the weekly from January to mid-May for a collective total of over 50 years."

What do you mean by "collective total"? Did you [illegible] six papers for a total of eight and a half years each?

A No. Some of the newspapers went out of business in a few years, others continued throughout the period.

[illegible] one for two or three years, others for twenty years. The total is fifty years.

Q Also in, page 3, you say "full years of [illegible] for certain significant dates," and you

list 1807, 1829, 1830.

A Yes.

Q Why were those considered significant by you?

A 1807 was a year of much activity on the Lower Housatonic. A number of things occurred that year that I thought might shed light on the problem I was studying. So I read every weekly newspaper for that year.

1829 or 1830 I picked because that is the year in which Professor Dewey wrote the book in which he alleges logging.

Q Does he allege, or state?

A He stated it. But it is an allegation, unproven.

Q At line 20 you use the term "relevant years". What were those years?

A They were years that dealt with petitions that were handled or -- handled regarding navigation on the Housatonic. Petitions were filed asking from time to time to improve the river. There was one in 1761 for instance.

Q What type of improvement?

A Sometimes they wanted to build towpaths, or clear obstructions, or clear canals.

Q For what purpose?

A To make it usable for boats. It was not at that time usable for boats.

Q Boats of what type?

A Of any commercial use.

Q On line 35 of page 3 you speak of "historical geography."

A Yes.

Q Is historical geography as a discipline the most relevant academic specialty in an inquiry such as this?

A No. Historian is probably more appropriate. But certainly historical geographer would come next in line, be the next nearest relevant discipline.

Q On page 4, line 7, you talked of -- I am sorry. Let's go back to page 3.

At line 49 on page 3 you talk of a number of 18th and 19th-century statements. What specific statements are you referring to?

A I am referring to Connecticut State Library Archives, "Finance and Currency," Series 2 Volume 1, Document No. 57a and 57c.

MR. MC INTOSH: May I ask that the witness recite these authorities more slowly.

THE WITNESS: The next place is Connecticut State Library Archival Series, Industry, Series 1, Volume 2, Document 364.

The third is Samuel Orcutt, "History of Derby," page 404.

The fourth is an article by a man whose last name is Countryman. For full citation I can provide it, an article called "Transportation," pages 4, 5, 6. 456

In addition, Marquis de Chastellux reported in November 1780 from the town of Kent, "This river is not navigable and is easily forded near Bull's Iron Works", which is in Kent. That is Volume 1, pages 83 and 84.

I have given more.

MR. TELLEEN: You don't want to list them?

THE WITNESS: Gladly, if you want to take the time.

BY MR. TELLEEN:

Q Maybe we could shorten it. On the basis of those, and statements like the one you read that the river is not navigable. That is the basis for your statement at the bottom of page 3, lines 49 and 50?

A Yes. Let me read one more.

In 1804 Timothy Dwight reported that "Almost all this distance is a continued ripple." The distance of which he was speaking was from Canaan to Derby. That is in Timothy Dwight's "Travels", Volume 4, page 2.

Q What season of the year was he talking about?

A It might be in one of any citations. I don't know offhand.

Q It could have been September?

A It could have been any time of the year.

Q Do you know anything about what was -- what was that man's name?

A Timothy Dwight, President of Yale. He was one of the most -- I guess he was our most, best respected commentator on early 19th-century Connecticut. He traveled widely. I think I better read the rest into the record.

PRESIDING JUDGE: Let's not do it now. At the rate we are going we will be here until tomorrow. I did not think you would take us quite as seriously as you did.

THE WITNESS: My reputation as a professional is challenged here.

PRESIDING JUDGE: Can you wind up for the day, Mr. Wallace?

MR. KOSLOFF: Your Honor, I would like to make an observation. That is that this witness has waited until now to give us the specific textual citations in support of his observations. I feel that that is improper, because only until this minute have we been able to adduce the factual underpinning for those conclusions.

PRESIDING JUDGE: What do you suggest I do about it?

MR. KOSLOFF: Well --

MR. WALLACE: If I may be of aid to my colleague, Your Honor, Staff is presumed to make appropriate requests, or a motion, if that is necessary, at or near the end of our cross-examination of Professor Collier, that would seem

to dovetail with what Mr. Kosloff is saying.

PRESIDING JUDGE: Do you mean by that a motion to strike?

MR. TELLEEN: I do not want at this time to say what those requests or motions might be.

PRESIDING JUDGE: Just bear in mind that you had his testimony, as he has had yours. You were at liberty to make requests for information or supplementation.

Bear in mind also that there may be a question as to whether he was under any obligation in the first instance to supply this information.

MR. TELLEEN: The Staff is perfectly willing to continue with the cross examination.

PRESIDING JUDGE: All right. I just do not feel we ought to waste too much time on ineffective procedural problems.

Mr. McIntosh?

MR. MC INTOSH: One other point, Your Honor; the only exhibit introduced by this witness is a 12-page bibliography of the various supporting items he reviewed which is support for his professional opinion given in this proceeding.

PRESIDING JUDGE: Was that annexed to his testimony?

MR. MC INTOSH: Yes, sir. It is an exhibit in this proceeding.

PRESIDING JUDGE: It was served in advance, was it not?

MR. MC INTOSH: Yes, sir.

MR. TELLEEN: Your Honor, it was served with rebuttal testimony, as to which the mailing requirement was November 8. Staff for example received its copy on November 11. So that is when the 12-page bibliography first was known.

PRESIDING JUDGE: We can hardly fault the witness, who was within the time schedule allotted to him, is that not correct?

MR. TELLEEN: Clearly in terms of meeting the rebuttal deadline, yes.

MR. KOSLOFF: May I be heard on this?

PRESIDING JUDGE: Yes.

MR. KOSLOFF: I observe that although we concede there was a bibliography filed, there was absolutely no special reference to any particular matters cited in those -- in that bibliography. Therefore it becomes virtually impossible to know the facts upon which Professor Collier has based his assertions.

PRESIDING JUDGE: Mr. Kosloff, let me ask you a question: was the witness required in the first instance to supply the data that you are taking exception to?

MR. KOSLOFF: I would --

PRESIDING JUDGE: Would his testimony stand without it?

MR. KOSLOFF: I would strenuously object to the

consideration of the bibliography introduced here as evidence in this proceeding.

PRESIDING JUDGE: You are introducing another question, and not answering mine.

He has answered questions on cross examination, has he not? This is how this material that you are taking exception to, or objecting to, came out, is it not, as a result of answers to questions?

MR. KOSLOFF: That is true as to this particular question.

As far as I can see if I do not ask the questions Mr. Collier cannot give the answers. I would object to his introducing additional supplemental materials, absent my cross examination of him.

PRESIDING JUDGE: You have his testimony. You can ask him questions or not ask him questions, as you wish.

MR. KOSLOFF: Very well.

PRESIDING JUDGE: If you ask him a question and he gives you quotations in response to your question I don't see how you can very well object.

MR. KOSLOFF: I agree as to that point.

PRESIDING JUDGE: I think we can recess now. I don't know how this cuts you off. Were you right in the middle of something?

MR. SELLERS: I think we can start in the morning,

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without any problem.

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDING JUDGE: On the record. We will resume at 10:00 tomorrow morning.

(Whereupon, at 4:30 p. m., the hearing was recessed, to reconvene the following morning, Thursday, November 21, 1974, at 10:00 a. m.)

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BEFORE THE

FEDERAL POWER COMMISSION

In the Matter of:	:	Project Nos. 2576
	:	2605
THE CONNECTICUT LIGHT AND POWER COMPANY	:	2632
	:	2646
	:	

Hearing Room F
Federal Power Commission
825 North Capitol Street
Washington, D. C.
Thursday, November 21, 1974

The above-entitled matter came on for further hearing, pursuant to recess, at 10:00 a.m.

BEFORE:

ISRAEL CONVISSER, Presiding Administrative Law Judge

APPEARANCES:

(As heretofore noted:)

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PRESIDING JUDGE: The hearing will come to order, please.

Whereupon,

CHRISTOPHER COLLIER

the witness on the stand at time of recess, resumed the witness stand and testified further as follows:

PRESIDING JUDGE: Mr. McIntosh, do you have a statement?

MR. McINTOSH: I have a preliminary matter I would like to discuss, Your Honor.

PRESIDING JUDGE: Yes. I will have something, too, but go ahead.

MR. McINTOSH: Your Honor, I am fearful there may have been some sort of mixup yesterday. If you recall, there were two factual items Mr. Benedikt asked that the applicant inquire regarding. One was an underwater electric cable in Lake Candlewood, installation of such a cable. The other was as to work done in the vicinity of the Rocky River hydro project.

Your Honor will recall the witness on the stand said he was unfamiliar with that information.

I asked Mr. Lull whether he was familiar with it. In one instance he was, on the other he had no information. But he called corporate headquarters, talked to people there, and did get information on both points.

I believe if Mr. Benedikt wanted to inquire further on these points we would have placed Mr. Lull on the stand

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again yesterday.

I have not reviewed the transcript, but I believe Mr. Benedikt indicated he was not necessary.

This morning Mr. Benedikt asked me to make a statement, which I will do, although I do not consider it evidence in this proceeding. We do not recognize the materiality of relevance of any information I would give. However, I am willing to make some statement if this is what Mr. Benedikt wants, and Your Honor will permit it.

PRESIDING JUDGE: Making a statement would hardly facilitate things.

If you made a statement and nobody objected to the form in which it was put in the record, I would regard it as a statement of fact as if it had been testified to.

If you prefer to put Mr. Lull on the stand, I see no objection to that.

MR. McINTOSH: The problem is, Your Honor, Mr. Lull left yesterday, and is no longer with us. I should have stated that.

PRESIDING JUDGE: Would other counsel present object to a statement being made by Mr. McIntosh for the record, and considering the authenticity of the statement to be factual?

MR. KOSLOFF: We have no objection.

MR. TELLEEN: Would it be understood it was on the basis --

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PRESIDING JUDGE: Of information obtained from the records of the company.

MR. TELLEEN: We would have no objection.

PRESIDING JUDGE: Mr. Benedikt, I think this was your suggestion.

MR. BENEDIKT: Yes. I did not request Mr. Lull because it was so late in the session.

PRESIDING JUDGE: There being no objection, we will receive Mr. McIntosh's statement for the record.

MR. McINTOSH: Your Honor, the statement I am about to make is not on the basis of any formal research by me. It is on the basis of informal conferences with representatives of the applicant who themselves have represented to me that they have received information from those in the company who should be in a position to know the facts I will state here.

First, it is my understanding that in the relatively recent past there has been an installation of a 13.8 kv distribution line under the surface of Lake Candlewood.

This distribution line replaced a distribution line of similar capacity, 13.8 kv, which had been an overhead installation. It is my understanding that both lines, the old and the new, serve purely a distribution function, primarily to meet the load of residences on the West side of Lake Candlewood, and the reason for the replacement was that the former 13.8 kv line was considered obsolete, by the company, and

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that it was a potential danger to air navigation from the nearby airport.

The second point Mr. Benedikt inquired about was work at or near the Rocky River hydro project. I understand there has been work of a type in that area which may have given rise to the observations made by Mr. Benedikt. I understand it was the conversion of a 69 kv transmission line and associated substation facilities to 115 kv. I understand that work was continuing as late as this summer.

PRESIDING JUDGE: Thank you very much, Mr. McIntosh.

Mr. Benedikt, you are getting an awful lot of attention. I have been considering the exhibits that you wanted to leave with me. Something occurred to me last night about which I will inquire of Mr. Telleen.

Were you planning to offer as an item by reference the applications made by Connecticut Light and Power in this case?

MR. TELLEEN: Which applications, Your Honor? The applications for license are in -- I am sorry --

PRESIDING JUDGE: The applications to which the Exhibit R Revised, and Exhibit S, are annexed.

MR. TELLEEN: It is my understanding that that application is an item by reference already.

MR. McINTOSH: I believe all four applications were made items by reference, Your Honor.

PRESIDING JUDGE: Very good.

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Then, Mr. Benedikt, those items you wanted to leave with me are already in the record, since they are part of the applications that have been made items by reference. This, however, does not relieve anyone of the responsibility on brief to call my attention to necessary material in the applications or in the revised exhibits that he wants me to focus on.

Even if I read all these things I might not see the particular point someone wants to make.

Mr. McIntosh.

MR. McINTOSH: With trepidation I make my next remarks.

Is there confusion regarding the application to which you refer? I don't know the materials Mr. Benedikt tendered to you. Some of the materials last evening, before we recessed, dealt with an application not to this Commission but to a State Agency. I assume we are not referring to those materials.

PRESIDING JUDGE: No.

MR. McINTOSH: Thank you.

PRESIDING JUDGE: I understand the items -- there were two volumes -- that Mr. Benedikt wanted to leave with me, which I refused to take, were revised Exhibit R --

MR. BENEDIKT: No, Your Honor.

Revised Exhibit R is directly to the Federal Power Commission.

The two volumes had to do with an application of the CL&P to the State Agency, and I guess they are not perfectly

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perfectly clear.

PRESIDING JUDGE: I am sorry. I did not understand that at the time you mentioned them.

I seem to recall that I raised some question as to whether or not those exhibits were part of the applications. But I suppose you were talking about the State Agency applications.

MR. BENEDIKT: Yes. The intent was to show extension of plant that is proposed.

PRESIDING JUDGE: Then my original ruling will stand, and my comments this morning are withdrawn.

There was one further matter toward the end of our hearing yesterday with respect to Professor Collier's lately-submitted -- what was it? -- bibliography?

As I indicated last evening I did not see any ground for faulting him or rejecting the bibliography.

Nevertheless, I do recognize that the late date on which the parties received the bibliography did not give them adequate time in which to do whatever research they may have been inclined to do.

Taking that into account, if after the hearing is closed the parties on the basis of whatever research they do feel they have not had an adequate opportunity to cross-examine the witness, I will consider a motion, supported by good caution, submitted with a showing of what the cross-examination

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would involve, a motion to reconvene the hearing for the purpose of continuing cross-examination. I will certainly hear from Connecticut Light and Power in opposition to such motion. But I think in all fairness opportunity should be afforded to go adequately into the material Professor Collier has submitted and is testifying to.

MR. McINTOSH: May I be heard?

PRESIDING JUDGE: Surely.

MR. McINTOSH: First, Your Honor, the material cited in Professor Collier's bibliography is material I believe that has been available to all parties. It is principally records in public institutions, historical societies, newspaper archives, that type of material. It has been available to all parties since the time it was originally collected.

I am not aware of any reason that it has not already been examined by them, without regard to whether or not Professor Collier mentions it in his bibliography.

However, we will have no objection to a motion. If any party wishes at this time to move for an extension for that purpose we will not oppose it.

Professor Collier testified he spent 36 days researching, in preparing for his testimony. If any party wants 36 days or some such period, we will be delighted to give it to them.

PRESIDING JUDGE: I appreciate the spirit in which you meet this problem.

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I might comment that even though the material was, and is, available, the parties are entitled to know what Professor Collier is focusing on particularly, and to focus their own research on those points.

I would like when we are finished, whether today or tomorrow, to close the hearing. But I will do so subject to a motion which may never eventuate.

Are there any other preliminary matters?

MR. TELLEEN: Yes, Your Honor.

Go ahead, Mr. Kosloff.

MR. KOSLOFF: May I have about a 2-minute recess to discuss something?

PRESIDING JUDGE: Go ahead, Mr. Kosloff.

MR. KOSLOFF: Thank you.

(Discussion had off the record.)

PRESIDING JUDGE: On the record.

MR. KOSLOFF: Thank you, Your Honor. I will not address the Bench at this time.

PRESIDING JUDGE: Mr. Telleen?

MR. TELLEEN: I am prepared to start cross-examination again.

PRESIDING JUDGE: Professor Collier, you have already been sworn.

CROSS-EXAMINATION (continued)

BY MR. TELLEEN:

Q Professor Collier, at page 4 of your direct testimony you use the word -- line 7 -- "vessels."

What type of size of vessels are you referring to?

PRESIDING JUDGE: This is your direct testimony, Professor Collier.

BY MR. O'LEARY:

Q Page 4, line 7.

A Yes.

Q Did you understand the question?

A Yes, sir.

A "vessel" is, I assume, something larger than a rowboat or a small boat.

PRESIDING JUDGE: In what sense were you using the term?

THE WITNESS: I would have excluded rowboats or canoes..

BY MR. O'LEARY:

Q Thank you.

At line [illegible] page 4 of your direct testimony your use of the word "insignificant" suggests some reefer transportation north of Derby. What was it?

A I think if you look at lines 44-48, although it is reasonable to assume rowboats, canoes and perhaps rafts were used at numerous points on the river to cross it and travel short distances north and south, there is no reason to believe that this boating has any economic significance.

Q To the travel of rowboats, canoes, and perhaps

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rafts, at numerous points on the river, and travel short distances north and south, was the river transportation you were referring to at line 27?

A. No. That deals with Massachusetts.

The line 7 --

Q. The question refers to line 27, page 1. You specifically talk about "transportation north of Derby."

A. The answer to the question is "Yes."

Q. At line 34 you talk of the existence of evidence of boats of some sort proceeding during spring freshets from New Milford to Derby. What is the source of that statement?

A. Do you want merely the name of the author, or a volume and page citation?

Q. The name might be a starting point.

A. Timothy Dwight alluded to some.

Q. The same man we talked of yesterday, and you quoted him as saying "the river was a trickle"?

A. I believe he said it was a "continued ripple."

Q. At another point in his writings Dwight had a different view of the river?

A. He alluded to some --

Q. You said yesterday he was a well respected observer of the Connecticut scene?

A. Yes.

Q. At line 37 you refer to "boats." Do you know what

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those boats carried?

A. I indicate here that I am not sure they carried anything.

Q. Someone just put them in the river and they floated by themselves?

A. I have some evidence that one tied a cord to these boats in the rapids and walked along on the bank, because they were not capable of carrying anything under these conditions.

Q. But you do not know whether the boats carried commerce or people, or what?

A. I was unable to find, and I searched diligently, any evidence that these boats carried anything.

Q. But the boats did travel that distance, as you report?

A. I do not report any distance. There was boating at some points. There is some evidence of some boating at some points.

Q. You speak specifically about New Milford to Derby.

A. Areas within that section. I specifically looked for information --

Q. Thank you. Thank you.

MR. McINTOSH: May the witness complete his answer?

MR. TELLEEN: He responded.

PRESIDING JUDGE: Let him complete.

THE WITNESS: I looked specifically for evidence of communication between certain points, assuming I could then

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discover there was in fact significance, meaningful transportation. I found no evidence of such point-to-point, north-south traffic.

BY MR. TELLEEN:

Q. Line 44 on page 4 says you are making an assumption as to that travel. Or is it line 45? Speaking of travel short distances north to south. You say "assume."

At line 40 of page 4 you talk about a "source reporting downstream movements." Is that another reference, beyond Mr. Dwight's reference?

A. I think that is also Dwight. I am not certain. I can check it if you wish. I can check it right now, in a matter of ninety seconds to two minutes, if you wish.

Q. If you care to.

A. Timothy Dwight, 1811.

Q. Thank you.

On page 5, line 13, of your direct testimony, and above there, lines 1-13, you cite some newspaper sources.

What type of boat navigation were these sources referring to?

A. Newspaper sources?

Q. The first paragraph of page 5 is the basis of my question.

A. I don't see any newspaper sources there.

Q. I am sorry. Just the sources you do recite there.

A. What is the question?

Q. They talk about boat navigation.

A. Yes.

Q. What type of boat navigation were they referring to?

A. These statements are statements in Navigators and Geographies, each of which refers to the head of navigation as being at a certain point ranging from 12 to 16 miles up the river. They refer to that point as the "head of navigation."

Q. Boat navigation?

A. They refer to it as "navigation."

Q. Were they referring to a certain kind of boat travel?

A. They were referring to navigation generally.

I am sorry, but I discovered when I got into this that the law defines "navigation" differently from the way geographers do.

Q. Do you know whether boats traveled those 14 miles?

A. Yes, they did.

Q. What size boats?

A. Generally sloops, range from 90 feet down -- 90 feet long.

Q. You have no idea what the draught of them was?

A. Usually about 6 feet laden.

Q. Page 6, line 7: When you used the term "transportation" were you speaking in a general sense of transportation

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in the area?

A. I am speaking about the transportation of goods and people.

Q I am asking, you are not -- the reference is not to a specific type of transportation between specific points? You are speaking of transportation in the general sense in Western Connecticut, in whatever timeframe?

A. Well, no. In the Housatonic River Valley.

Q At line 28, page 7, when you speak of an interest in "developing navigation on the Housatonic River," to use your words, are you referring to various attempts at canal building, which you describe elsewhere in your testimony?

A. There were three kinds: Canal building, building towpaths alongside the river, and clearing obstructions.

Q Page 10 of your direct testimony, line 19, you say that there was no masting done for the Royal Navy in Connecticut at all. Those are your words.

A. Yes.

Q Was masting for boats, ships, other than those of the Royal Navy done in Connecticut?

A. Yes.

Q On page 11 of your direct testimony at the top of the page you speak about Samuel Orcutt, as well as -- is it Chester Dewey?

A. Yes.

isi6

Q Did Dewey and Orcutt write about the same period of time with regard to freshets?

A Were they writing at the same time, or were the freshets at the same time?

Q Did they write about the same period?

A No. Dewey wrote his materials that I refer to here in 1828 or 1829. They were published in December 1829.

On the Orcutt material, it was developed between the 1870s and 1880s.

Q When Orcutt talks about freshets is he talking about the years after ~~1850~~ 1850?

A Before and after. Orcutt has a chart on which he lists the freshets, which were almost annual. I think actually that chart begins after 1850.

My answer is that it might extend a little before 1850.

Q As far back as 1828?

A I don't believe that chart goes back that far.

Q So Orcutt wrote about freshets on the Housatonic River in a period of time which was different from the period of time Dewey wrote about?

A May I check that? I recall I do have specific dates for that Orcutt material. 1853 to 1879.

Q You would agree with my statement that they wrote about different periods of time, as to spring freshets?

A Yes.

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Q Page 11, line 21, of your direct testimony, you speak of an "official Colony committee in ~~1720.~~ 1762." What was the function of that official Colony committee?

A There was a petition by private individuals to, I believe, conduct a lottery for the purpose of improving the navigation of the river. They had asked for a certain sum of money, as I recall 500 pounds. The General Assembly established this committee to see if this was feasible and if 500 pounds was the correct sum. The committee was to see if such work would be feasible.

Q Thank you.

At line 37 you use the term "thorough reading of those county newspapers."

MR. McINTOSH: Could Mr. Tolleen identify the page?

MR. TELLEEN: Still on page 11; line 37.

MR. McINTOSH: Thank you.

BY MR. TELLEEN:

Q Would your answer at this time roughly correlate with your answer yesterday in terms of available newspapers and the ones you examined?

A Let me amplify a little. I went to the major repository of newspapers for Early America History, which is the "American Articuarian Society," as the best collection.

There I looked at all of the newspapers they had available for Litchfield and Berkshire Counties for the years in which

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I was interested. I went to the Litchfield Historical Society where they had a much fuller run of the Litchfield papers. I believe I exhausted the facilities of these two repositories.

Q You scanned all these papers for all the years from 1790 to 1831?

A I scanned the ones they had. There were breaks, of course.

Q How big are some of the breaks?

A Well, sometimes there is a single issue missing from the run ~~from the run~~ of the year. Or there might be as many as perhaps 18 months missing.

Q Again, did you scan all parts of the papers, or was it a selective scan, as you suggested yesterday?

A We scanned all parts of the papers. There is a system for doing this. There is an eye motion that you develop for scanning something that big. We have found it pretty effective. I have been doing it now for 15 years.

Q On page 12 of your direct testimony, at line 13 there is a sentence beginning "A number of entrepreneurs."

At line 17 there is a sentence beginning "Just seven years before."

A Yes.

Q Are the two sentences beginning there at those lines from the same source?

A. The "two sentences" are which lines?

Q. At line 13, a sentence begins 'A number of entrepreneurs."

On line 7 there is a sentence beginning "Just seven years before."

Are both those sentences based on the same source?

A. No. We are dealing with two different projects.

Q. What do you mean by "projects"?

A. Projected efforts to clear the river out of obstruction.

Q. Two different historical periods?

A. Yes; two different documents, two different sources.

Q. So the sentence beginning on line 17 is based on the work without an author? Or, with no listed author?

A. That is correct; the 1822 work. The early one is 1761.

Q. Still on page 13, at line 20 you talk of the -- about "20 sawmills."

How many of the 20 sawmills were on tributaries of the Housatonic as opposed to the river itself?

MR. McINTOSH: Excuse me. I believe the reference is to "20 books" not "20 sawmills."

MR. TILLEEN: The question assumes 20 sawmill books related to 20 sawmills.

PRESIDING JUDGE: Why not ask him?

MR. TELLEEN: There was reference to "about 20 sawmill account books" at which you looked. Was there one account book for each sawmill?

THE WITNESS: Yes.

BY MR. TELLEEN:

Q So you looked at the records of 20 sawmills?

A Yes.

Q How many of the 20 sawmills were on the tributaries of the Housatonic as opposed to the river itself?

A I will have to say that I do not know. I say that advisedly, because I tried to determine the exact location of those sawmills, and in some cases was unable to.

Q You have no way to state with precision how many of the sawmills were on tributaries of the Housatonic?

A That is correct.

PRESIDING JUDGE: Were any of them on tributaries?

THE WITNESS: I believe most of them were on tributaries to the Housatonic.

May I expand?

PRESIDING JUDGE: Yes.

THE WITNESS: The point of that material was to demonstrate that sawmill operations were local operations. Whether or not they were in fact on the Housatonic as opposed to a tributary was not relevant to the point I was making in that paragraph. I was there attempting merely to demonstrate that

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they were very local operations.

BY MR. TILLEY:

Q. Were there sawmills on the Housatonic?

A. Oh, certainly. Oh, yes.

Q. You use the term "various periods from 1722 to 1862." What were those various periods within that 140-year span?

A. What line is that?

Q. Right around lines 28-29.

A. Some account books were fragments and covered a couple years. Some covered as many as 40 ~~periods~~ years. That is what "various periods" refers to.

Q. Does that mean sometimes sawmills operated for two years and were discontinued for 30?

A. The records are not extant, at least not known to be extant.

Q. At line 33 you speak of "two whitewood trees in the river." You quote that.

A. Yes.

Q. Is there any indication of where the logs are from?

A. There was none in the account book.

Q. Thank you.

At line 36 --

A. May I return to that?

Q. Certainly.

A. The logs, the two logs, were stuck in the river. They

were not floating. They were stuck. A man came and said "They are stuck in the water," apparently said "They are stuck in the water in my land. If you want to buy them, I will sell them to you."

This occurred over probably a day or two, so the logs remained in a fixed position for at least a couple days.

Q Was that discussion in the account book?

A No. But it went on -- it was clear that the mill owner had to be approached by somebody who said -- that somebody's name is known -- that "I have those two logs," and the mill owner would then go and write down, and say "All right, I will give you $4," or "give you $7" for those logs, if you can get them out."

Q The account books reported someone came and said --

A The account book merely reported "By 2 whitewood trees" as a credit. On one side are the debits, on the other the credits. The individual with the trees owed some money to Salmon Buck and he was credited with $4 or $5 on the credit side, with this notation.

Q Right.

At line 26 in the same paragraph in which you refer to sawmills you talk about an "unusual event" in Western Connecticut. When you use that term are you referring to activities at local sawmills?

A That comment is made in the context of these account

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books. The account books have these frequent references to "hauling," "drawing," "pulling," "dragging," "sleighing," "sledging," "carrying," "carting" logs.

And it was the single entry that had reference to logs in the water, any place.

Q When you speak of "unusual event" you refer to activity around local sawmills in general.

A In relation to logging.

Q When you refer to all those various types of transportation you are referring to transportation as it relates to activity around local sawmills?

A Not entirely. Some of those account books were not for sawmills. One was that of a Derby merchant, Prescift Hawkins, as I recall. I know the "Prescift" part is right.

"Hawkins" was a merchant, more or less of a general merchant. He had a warehouse on the river at Derby, and in association with the warehouse he had a wharf.

Nevertheless, the entries in his account books are overwhelmingly "carting," "hauling", "teaming."

Q You lumped his reference under the term "about 20 sawmills"?

A "20 sawmill account books."

MR. McINTOSH: I believe the question refers to line 39, Your Honor.

MR. TELLEEN: Right.

MR. [illegible]: "Other ledgers."

I think that is what the question relates to, does it not?

MR. TELLEEN: I see. Very good. That explains it.

BY MR. TELLEEN:

Q Mr. Hawkins is one example of those "other ledgers"?

A Yes.

MR. TELLEEN: That completes my cross-examination of Professor Collier on his direct. Shall I go to the rebuttal?

PRESIDING JUDGE: Yes.

BY MR. TELLEEN:

Q On page 3 of your rebuttal at the top of page 1 -- in the space --

PRESIDING JUDGE: Line 1.

MR. TELLEEN: Page 3, line 1.

BY MR. TELLEEN:

Q -- in the space of one line at that point you use two different words to describe that which you supplied Professor Hoyt for his review.

Precisely what materials did you give him to review?

A I would call it a workpaper, something like that. I subsequently had another communication from him in which he calls it a "study."

Q How did the working paper you supplied Professor Hoyt differ from your composite of your direct testimony and rebuttal testimony which you supplied to the reporter in this

who else?

A. Counsel was also provided a copy of that working paper, the counsel who retained me.

Q. But was that working paper you gave Professor Hoyt supplied to the other parties in this proceeding?

A. That is up to counsel. I was retained by counsel, who came to me and said: "We are interested in navigation on the Pocatanic River. Do you know anything about it?"

Q. Okay.

A. This is the background.

Q. Okay.

A. Which I think is necessary here for you to understand why it was not my responsibility to do anything more with this paper.

Q. We are not speaking of the procedural issues. I am just trying to ascertain precisely what you gave Professor Hoyt.

A. I gave Professor Hoyt what I call a working paper, sort of a typescript draft that summarized my findings.

Q. Was it a typed-up document that you provided to him?

A. Yes.

Q. Did you provide him with your work notes?

A. No notes. I gave him source citations.

Q. Did you provide to him any of the materials you examined?

A. No.

MR. [illegible]: Your Honor, I presume Professor Hoyt received something other than the parties to this proceeding have received.

PRESIDING JUDGE: Received, or submitted?

MR. [illegible]: Professor Hoyt.

PRESIDING JUDGE: Oh, yes.

MR. [illegible]: Was given something by Professor Collier he received.

I think in terms of fairness and in an effort to achieve a complete record it would be appropriate for me to request that Professor Collier supply to me and to all the parties in this proceeding the precise materials he supplied Professor Hoyt.

PRESIDING JUDGE: Mr. McIntosh, do you see any objection to what may perhaps seem to be a reasonable request?

MR. McINTOSH: I do see objection, Your Honor.

I wonder if Mr. Pelicon and/or I could question Professor Collier as to what was Professor Hoyt's function here.

PRESIDING JUDGE: Do you want to do it on the record, or see if you can work out something during the morning break?

MR. [illegible]: I would be doubtful of the worth of such a discussion, Mr. McIntosh. I think Professor Hoyt is brought into this hearing for very specific reasons by Professor Collier. Whether or not that is appropriate is another matter. I think it is appropriate that we have a chance to

review generally what Professor Pratt reviewed himself.

PRESIDING JUDGE: That is what I have in mind. It seems to be maybe around 11:15 when we take our break you can talk to Mr. Mattison and to Professor Collier and see if you can work out some arrangement for getting that material. There is some provision for getting workpapers. Whether this which is entitled "Workpapers" falls within that operation, I can not say offhand. But at least superficially the request appears reasonable.

I would like you to talk about it. If you can not work out something, come back to me.

MR. TIEDEN: Very well, Your Honor.

PRESIDING JUDGE: Why don't you leave it until another 15 or 20 minutes?

MR. TIEDEN: Very well, Your Honor.

BY MR. TIEDEN:

Q Professor Collier, at page 3, generally, line 23, you start an answer.

A Yes.

Q Elsewhere, on pages 2 and 3 of your rebuttal, you indicate generally the importance of primary sources. Do primary sources include personal accounts by people who, like Mr. Follows, were not only witnesses but participants in the events of by which about?

A Yes. Not in all cases; some.

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What is a primary source for a given research problem might not be a primary source for a different research problem. In other words, the same document is sometimes primary, sometimes secondary.

Q. Thank you.

At line 7, page 4, of your rebuttal testimony you speak about Mr. Fellow's "describing the charms of the Housatonic."

Are you in any way questioning the fact Fellows and his companion traveled down the Housatonic from Pittsfield, Massachusetts, to Long Island Sound?

A. Yes, I certainly am. They had to get out and walk part of the way. They did not travel the entire distance by boat down the river.

Q. But do you in any way question the narrative written by Mr. Fellows?

A. I don't question anything he said.

Q. Thank you.

Do you agree that Fellows was a personal observer and participated in the event he described?

A. Well, yes. I have some reservations about the accuracy of his account of what he in fact did. But I certainly will agree that the did participate in and observe in general this trip that he took.

MR. TRILLEM: Your Honor, as an aid to a line of questioning I am going to proceed with we have photocopies for the

portion of pages from the Dictionary of American Biography, Volume 3, Pages 137-203.

Attached to that is a photocopy of a page from the National Cyclopedia of American Biography, Volume 6. That is page 320.

We would like to pass these around for the assistants of the parties, and we may very well offer them as exhibits or as items of reference, later.

PRESIDING JUDGE: You have not submitted them before?

MR. BELLMEN: No.

PRESIDING JUDGE: Are you going to cross-examine from this material?

MR. MITCHELL: No. Well, in part. The Biography has to do with Chester Davey, to whom Professor Collier refers.

PRESIDING JUDGE: If you are not going to cross-examine from this material I don't see why you want to do it at this point in the proceedings. If you do, and do plan to offer it, is there any objection?

MR. MITCHELL: Your Honor, I would like to see it.

MR. BELLMEN: Certainly.

(1). Perhaps some of the questions I have might approach cross-examination on the basis of this.

(2). We might want to offer this as an exhibit or item of reference, too, later.

Might we have an appropriate time for the parties to

[illegible]

PRESIDING JUDGE: Why do you not show it to Mr. McIntosh?

(Mr. Tolleen hands document to Mr. McIntosh)

MR. TOLLEEN: The only thing which does not appear is a more precise publication date as to both items, Your Honor. We could find out what those were, very quickly.

PRESIDING JUDGE: You mean by "both items" the Dictionary and the Cyclopedia?

MR. TOLLEEN: Yes. I understand these are existing on-going works which are added to from time to time. The Dictionary of American Biography is, certainly.

They have been marked just for convenience, in terms of the beginning and ending of the parts which deal with Chester Dewey, Your Honor.

PRESIDING JUDGE: Mr. McIntosh?

MR. McINTOSH: I believe it is appropriate for Mr. Tolleen to proceed, Your Honor. He has not offered these in evidence.

PRESIDING JUDGE: I do not suppose he will offer them until he presents his case.

MR. TOLLEEN: That is correct, Your Honor.

PRESIDING JUDGE: You may proceed, Mr. Tolleen.

BY MR. TOLLEEN:

Q Professor Collier, on page 5, line 24, of your rebuttal, you acknowledge that Professor Dewey was a prominent

and well recognized naturalist.

A. That is correct.

Q. Are you aware Professor Dewey is presently listed by Columbia University in its Encyclopedia as an authority on sedges, which are rush-like riverine plants, one of which was named after him?

A. I knew that information. I have not seen it in the Columbia Encyclopedia. I have seen it other places.

Q. With reference to producer discussion of Professor Dewey's description of logging from Great Barrington, Massachusetts, south, are you aware Professor Dewey was born at Sheffield, at River Mile 92 just below Great Barrington in the year 1784?

A. Yes. Would it help for me to say that I am aware of the material in these two documents? I have read them several times prior to today.

Q. Thank you. I have just a couple more questions.

You are aware of the fact from 1784 until and including the time Professor Dewey worked on part of the history of Berkshire County he lived on the river part of the time studying and teaching at Williams College, which is near the headwaters of the West Branch of the Housatonic?

PRESIDING JUDGE: He lived on the Housatonic River?

MR. FINERTY: Near it.

THE WITNESS: Yes. I am aware of that.

Mr. Tellier.

BY MR. TELLIER:

Q During his many years near the Housatonic was not Professor Dewey in a position to be an eye witness of logging as well as to hear firsthand accounts of logging from ancient witnesses or their direct descendants?

A. He could have been.

Q The question is, was he in a position to?

A. He was in a position to.

Q Would you agree that Professor Dewey would be scientific and systematic in his observations and writings?

A When he was writing about his own field, yes, about biology and botany in particular.

Q Do you feel he would not be scientific and systematic in other writings?

A. I know many scientists, chemists, physicists, historians who in their professional work are very careful, and when they stray from their own field are incredibly naive.

Q You know of some?

A. I certainly do.

Q At page 3, line 30 of your rebuttal testimony you posit the theory that "... timber of which Dewey writes was accidentally swept down the river at times of floods ..."

Is it your opinion that a trained observer of river phenomena, as was Professor Dewey by the year 1826, or as an

intelligent young man living along the river in the 18th Century, could not distinguish between a flood and a flotation of logs?

A. It is my judgment in this case that there is a fair chance that he was deceived by hearsay evidence.

Q. Hearsay evidence?

A. We -- Yes.

Q. Thank you. Thank you.

MR. McINTOSH: Excuse me. I am not sure the witness completed his answer.

THE WITNESS: Yes. Mr. Tolleen smiled at the word "hearsay evidence," which is a legal term. But it has a historical meaning, also.

Historians use this term, and probably in a somewhat different sense from the way lawyers use it.

BY MR. TOLLEEN:

Q. You are right, it has legal significance.

A. It also has historical meaning.

PRESIDING JUDGE: What you are referring to really is the connotation of "hearsay" in law as distinguished from its connotation historically. I assume historically it may have a lot more respectability than it has in law. Hearsay testimony, or hearsay information, might be given much more credence than, at least in the past, the law was inclined to give it.

THE WITNESS: That is precisely why I used the word "received" before the phrase "hearsay evidence."

PRESIDING JUDGE: Have you finished with Professor Collier? I thought you indicated you were.

MR. ZELLEN: With that question, Your Honor.

PRESIDING JUDGE: I see.

BY MR. ZELLEN:

Q Page 7, line 30 of your prepared rebuttal testimony, you speak of a work by Edward C. Starr.

Do you know whether or not Reverend Starr indicated other specific sources in that work?

A He did quote other specific sources.

Q You refer to a book by I. H. Sherry, and W. H. Gentigns. Do you know whether that work has a bibliography attached to it?

A I don't recall.

Q Do you know whether it has a preface?

A I don't recall.

Q Do you know whether it uses footnotes or author's notes?

A It is my recollection of that book that it does not have any scholarly apparatus.

PRESIDING JUDGE: By "scholarly apparatus" you mean source references, footnotes, things of that sort?

THE WITNESS: Precisely.

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PRESIDING JUDGE: Thank you.

MR. [illegible]: The Staff has no further questions of this witness, Your Honor.

PRESIDING JUDGE: Very well.

We will take a recess until 11:30.

(Whereupon, at 11:15 a.m., a recess was taken to 11:30 a.m.)

(The recess extended to 11:40 a.m.)

PRESIDING JUDGE: Back on the record.

Do you want to make a formal motion, Mr. Telleen?

MR. TELLEEN: Your Honor, in view of disclosure this morning by Professor Collier that specific materials not available to the parties, other parties, in this proceeding, were given to Professor Hoyt and were the basis for Professor Hoyt's attitude toward Professor Collier's work, Staff moves that those specific materials given Professor Hoyt by Professor Collier be made available to all the parties to this proceeding.

PRESIDING JUDGE: Mr. McIntosh.

MR. McINTOSH: Your Honor, I don't know whether the record has been developed fully enough as to what the role of Professor Collier and Professor Hoyt is in this endeavor.

Perhaps Mr. Telleen, or I, or other counsel, may wish to direct questions to Professor Collier before you rule on this motion. Or perhaps you, yourself, would wish to ask Professor Collier some questions.

The law firm of which I am a member was retained by the applicant in this proceeding to represent it in this proceeding, and as part of preparation of that representation we retained Professor Collier as a consultant, and instructed him to do research and study on the issue of the history of navigation on the Housatonic River.

Professor Collier prepared a report to our law firm, which we have used in the conduct of this proceeding.

As I understand it, in the course of that preparation and in the tradition, apparently, of the Academic Community, Professor Collier requested two other gentlemen to serve with him and read his preliminary draft report and give him their comments before he submitted it to our law firm.

Those gentlemen were, as I understand it, gentlemen Professor Collier selected whom he believed might be of assistance in making comments regarding areas he had not covered or conclusions he had reached, or any other information they wished to pass on to him. Professor Collier paid these gentlemen himself as part of his effort to fulfill our instructions to prepare a report to us on the work he had done.

I consider what he gave them, this preliminary draft, and the comments they made, part of the process by which the attorneys for the applicant prepared their case. I do not consider that they are appropriate as evidence in this case. I believe they are privileged, Your Honor.

I object to granting the motion.

Your Honor, one further thing: I believe, although Mr. Telleen has not emphasized this, that he will argue that in some manner the testimony we have introduced in rebuttal by Professor Collier constitutes some form of disclosure or waiver of the privilege I am claiming for these materials. To the extent that argument is made and to the extent it might be persuasive to Your Honor, I feel so strongly that our files as attorneys for the applicant should not be opened and made available in this fashion -- nor would I feel Mr. Telleen's or Mr. Kosloff's or Ms. Boikess' files and work products should be made available to us -- that I will withdraw the portions of Professor Collier's testimony which refer to Professor Hoyt, which portions I believe are the basis for the entire inquiry.

PRESIDING JUDGE: I am not sure I follow on the question of privilege. Are you referring to the work product theory, the lawyer's work product theory?

MR. McINTOSH: Yes, sir. I consider this a part of the whole process of our preparation of this case.

PRESIDING JUDGE: You are not talking about privilege in the sense of attorney-client relationship?

MR. McINTOSH: Yes, Your Honor. It is part of our work product for our client. These are not communications with our client. No, sir.

PRESIDING JUDGE: As I understand it, the motion is not for the production of any comments Mr. Hoyt made.

Am I correct, Mr. Telleen?

MR. TELLEEN: That is correct, Your Honor.

PRESIDING JUDGE: What Mr. Telleen is moving be produced is the draft that Professor Collier submitted to Professor Hoyt and someone else. I have difficult relating that to the attorney's work product.

MR. McINTOSH: Perhaps I can go over this once more for you.

Our final function as attorneys for the applicant in this proceeding and our responsibility to the client was to prepare a presentation to be made in this proceeding.

As part of our work as attorneys for our client we retained the services of Professor Collier, who did certain work pursuant to our instructions and submitted to us certain works which were ultimately reflected at least in part in his testimony which is in evidence in this proceeding.

Pursuant to the effort of the attorneys of the applicant to prepare for this case Professor Collier prepared a report. That report, part of the process of its preparation, apparently involved Professor Collier discussing this and showing it to several persons in his field, who assisted him by commenting on it. It was then submitted to us and it was used by us in preparing for this proceeding.

I think, Your Honor, it is part of our work product. It was commissioned by attorneys. The effort was purchased by the attorneys in preparation for this proceeding.

I fail to see how it is not covered by privilege as our work product.

PRESIDING JUDGE: I still have difficulty with it.

Mr. Belleau, do you want to add anything?

MR. BELLEAU: Yes, Your Honor.

It is Staff's position that such materials which were given by Professor Collier to Professor Hoyt are not privileged and do not come under the work-product rule.

We believe this is so for the reason that those materials were specifically mentioned by applicant through its attorneys and such people as Professor Collier.

I think this amounts to a type of waiver of the work-product rule as concerns those specific materials given to Professor Hoyt.

We do not ask for letters between Professor Collier and the attorneys. We do not ask for attorney notes, nor for work notes of Professor Collier which were not given to Professor Hoyt.

I think our motion is very specific and very limited, and that the materials involved do not come under the work-product rule.

PRESIDING JUDGE: Mr. McIntosh suggested he would withdraw

a reference to the submission of the draft to Professor Hoyt.

Would you consider that a withdrawal of the waiver, assuming there is a waiver?

MR. TELLEFSEN: I would believe, Your Honor, if the record showed no mention of Professor Hoyt or Professor Collier's memorandum which Professor Hoyt reviewed, there would no longer be an issue on that, I would think.

PRESIDING JUDGE: Well, in view of Mr. McIntosh's offer this would be an easy way out of a rather knotty, legal problem which we are trying to decide right off the top of our heads, which is not always the best way to decide these problems.

Mr. Benedikt.

MR. BENEDIKT: Your Honor, as a document of reference, Doe, Berry and Howard, Mr. McIntosh's firm, at the prehearing conference made very specific references to Professor Hoyt which I think are relevant. I feel everything should remain, so we have an opportunity of establishing certain things about the testimony, in a brief.

MR. TELLEFSEN: May I have two minutes before speaking further, Your Honor?

PRESIDING JUDGE: Yes.

Off the record.

(Discussion had off the record.)

PRESIDING JUDGE: On the record.

MR. TALLON: Your Honor, in reference to Mr. McIntosh's suggestion that the specific aspects of Professor Collier's rebuttal dealing with Professor Hoyt be withdrawn -- and that is the basis for the motion -- my standing motion -- I believe I can not block the withdrawal of testimony offered by another party.

But it continues to be our position that in terms of the overall record of this proceeding and our responsibility to build the fullest possible historical record as to the issues here involved, that such record would be aided by the production of the materials given Professor Hoyt, in any event.

PRESIDING JUDGE: As I indicated off the record to Mr. Rosboff, in view of the fact that his witness can not remain for the full day and has a plane to make, I am going to reconvene this hearing. It strikes me that that will afford me an opportunity to receive briefs on this point so that I may defer decision until at least the reconvening of this hearing.

Do you wish to be heard on this, Mr. McIntosh?

MR. McINTOSH: Yes, Your Honor.

It is not clear to me just where we stand at this time. I think I have made an offer to withdraw. I quite agree with Mr. Tallon that he can not block withdrawal; we may withdraw any of the materials we have submitted in this proceeding.

If that withdrawal is made, I thought he was going

to withdraw his motion, although he prefers to make a full record.

I don't know then that we have a necessity for briefs, in this posture.

PRESIDING JUDGE: I will be glad to hear from Mr. Telleen again. I understood from what he said that he had changed his position with respect to his demand for the so-called [illegible].

Even though he can not block the withdrawal of the evidence, or the testimony, it seems to me there is still the question of whether, having submitted the testimony, assuming that it is a waiver, whether that waiver stands regardless of subsequent withdrawal. That might be a point you would have to brief for me.

MR. McTIGUE: I agree there are potential legal issues involved. I was not certain whether Mr. Telleen is pressing his motion, or merely expressing an interest in a full record, if this material is withdrawn.

PRESIDING JUDGE: I will hear from Mr. Telleen.

MR. TELLEEN: I was expressing interest in a full record, what I just now spoke.

But I think I well may desire to press the motion for the submittal of the materials given to Professor Hoyt, whether or not the specific copies of Professor Collier's testimony [illegible] are returned, for reasoning, is withdrawn.

PRESIDING JUDGE: I think that sort of obviates that [illegible] of your discussion.

MR. KOSLOFF: I wish, Your Honor, Mr. Tolleen would say, is the motion being pressed or not, so I know whether or not to remain a brief.

PRESIDING JUDGE: Will you say whether or not your motion stands, Mr. Tolleen?

MR. TOLLEEN: I would like to say that I would like to [illegible] minutes before making that motion or withdrawing that motion.

PRESIDING JUDGE: All right. You can tell me after lunch whether the motion stands.

Let's find a date that will be convenient to all for the reconvening of the hearing to accommodate Mr. Kosloff's witness.

We will go off the record while we probe that question.

(Discussion had off the record.)

PRESIDING JUDGE: On the record.

Mr. Kosloff, do you have a motion to make?

MR. KOSLOFF: Your Honor, if I may, considering the fact that my witness will not have to go on now, we are not under the pressure, I would like to have a little time to formulate my thoughts before I place on the record a formal motion. If it would be appropriate, I would like to have the time over the lunch period.

[illegible]: All right.

I will note for the record now that in view of the fact that Mr. Rockoff's witness can not remain for the balance of the hearing today or tomorrow, there will be a further hearing on January 7, 1975.

Mr. Rockoff some time today will make a motion for the production of the papers in connection with the historical study done by Professor Collier which he submitted to Professor Hoyt.

Is that correct?

MR. ROCKOFF: Your Honor, I would not limit it just to those documents submitted to Professor Hoyt. I would include all those other documents we seem to have cited in support of statements made by Professor Collier both in his direct and rebuttal testimony.

[illegible]: Will you tell me what other documents you have in mind?

Do you mean the newspapers he examined, the Gazettes, the historical documents?

MR. ROCKOFF: That is why I wanted time to formulate it. I would not ask him to present all those documents. In certain situations I merely want a specific citation to the facts which furnished or helped him formulate his opinions. It might be appropriate to give those documents to us, in some cases, or all of the documents to us, as in a letter to Mr. Hoyt, or

[illegible] just give a citation to a document which [illegible] public record. I would not ask for documents to which we have equal access.

That would be the nature and scope of my motion.

PRESIDING JUDGE: Without any further specificity, Mr. Kosloff will make a motion before the end of the day.

With respect to his motion and the motion made by Mr. Collier, opposition of the motion will submit briefs to be [illegible] December 6, 1974, on or before December 6, 1974.

The answering briefs, or replies, are to be made on or before December 20, 1974.

Now, do you have something further, Mr. McIntosh?

MR. McINTOSH: I hope I will be helpful, with an observation that on hand will make Mr. Kosloff's work over the lunch period a little easier.

I have conferred informally with the witness and I understand from him all the materials he cites and which he used as a basis for his opinion are available from the State of Connecticut Department of Environmental Protection, with equal access or better access than that available to the witness.

MR. KOSLOFF: Your Honor,

PRESIDING JUDGE: Let's not argue the point. There will be plenty of time to discuss it in briefs.

Getting back to the business at hand, which is the cross-examination of Professor Collier, you have finished, Mr.

Mr. Collier?

MR. COLLIER: I believe so, Your Honor.

PRESIDING JUDGE: Mr. Kosloff, do you have questions?

MR. KOSLOFF: Your Honor, before I attempt cross-examination, in view of my motion for disclosure of documents, the motion that will be forthcoming, it might be more appropriate simply to defer cross-examination until we have disclosure of these documents.

PRESIDING JUDGE: You mean after you have made your motion?

MR. KOSLOFF: I am suggesting --

PRESIDING JUDGE: After disclosure of the documents?

MR. KOSLOFF: Yes, sir. I can proceed today. But I could prefer to have the disclosure first.

PRESIDING JUDGE: You are assuming the outcome of your motion, are you not?

What happens if your motion is denied?

MR. KOSLOFF: Then I can simply go ahead with the questions I have, if I fail completely in my attempt to obtain additional sources of materials which would aid me in cross-examining this witness. I could then simply proceed with the questions that I do have.

PRESIDING JUDGE: When?

MR. KOSLOFF: On January 7.

PRESIDING JUDGE: Well, I do not -- yes, Professor

Collier will be here on January 7?

MR. [illegible]: This is the problem I anticipate.

PRESIDING JUDGE: I am not going to have Professor Collier come back if that is not necessary. But he will be here on January 7 to assist you in your cross-examination.

MR. McELROY: That is our plan, Your Honor. He will be available.

I can't see why Mr. Kosloff can not proceed with some of his cross-examination at this time, Your Honor.

As I made the point yesterday, all the materials Professor Collier relied on are equally accessible, from the Department of Environmental Protection, and have been for some time.

I would think Mr. Kosloff could proceed now on some points.

PRESIDING JUDGE: I would not foreclose him on January 7, if it seemed appropriate.

MR. McELROY: I think Mr. Kosloff could go through the testimony now, through cross-examination and ask Professor Collier on what points he relies for the materials he desires. If he wishes to then have a continuance of cross-examination, on the basis of requested materials on which Professor Collier relied, we will not object.

MR. KOSLOFF: This is not my witness. I would not want that source material in evidence. I want the opportunity to

[illegible] on the grounds, that I do not necessarily want to include those documents.

PRESIDING JUDGE: Mr. McIntosh is suggesting that you ask the witness now or after lunch what specific pages, dates, titles, you want him to tell you about, which I presume is what your motion would involve anyhow.

MR. ROSKOFF: Yes, Your Honor, it would.

PRESIDING JUDGE: If after receiving this information you find there is further cross-examination that you would like to engage in, we will be back on January 7.

It is now 12:21 on this clock. I think we might just as well recess for lunch. We can all do a little thinking in the interim, and then we return from lunch you can make your motion, Mr. Roskoff, and you can cross-examine Professor Collier.

Shall 1:30 be all right to reconvene?

MR. [illegible]: Fine, Your Honor.

PRESIDING JUDGE: We will recess until 1:30.

(Whereupon, at 12:20 p.m., the hearing was recessed, to reconvene at 1:30 p.m., the same day.)

jay file

AFTERNOON SESSION

(2:30 p.m.)

PRESIDING JUDGE: In the record.

WHEREUPON,

CHRISTOPHER COLLIER

was recalled to the stand, and having been previously duly sworn, resumed to testify as follows:

PRESIDING JUDGE: Mr. Kosloff, you may proceed to cross-examination.

CROSS EXAMINATION (CONTINUED)

BY MR. KOSLOFF:

Q Mr. Collier, excuse me, Professor Collier, referring to page 4, line 28 of your direct testimony:

Professor Collier, referring to line 28, page 4 of your direct testimony, you state: "There are no one in the 18th or the 19th Century Connecticut was making a living from the Housatonic River south of Derby, nor is there any evidence that anyone was dependent on the river for transportation."

Are you aware of the existence of the Cornwall Ferry or of the Hubbell Ferry at Kent?

A Yes.

Q Referring to page 11, line 19-21, of your direct testimony, there you state "At Great Falls in New Milford, the river rapidly descends 150 feet, making it unnavigable that timber washed over the falls would be broken

to pieces in the process, and jammed along the rocks as well.'

Is it not true that a certain amount of log breakage is, and was, an accepted part of the log-driving business?

A Yes.

Q Referring to a statement you made earlier today, you testified: "The law defines navigation differently than Geographers do."

Professor Collier, are you a lawyer?

A No.

Q Do you hold a degree in geography?

A No.

Q I am now going to ask you about specific documents which may be available.

Referring to page 3, lines 18-19 of your direct testimony, you state that "there are a number of 18th and 19th Century statements that the Pigeon was not navigable."

Will you be kind enough to list for me the specific documents by title and page number which caused you to form this opinion?

A Those are the same citations I offered in response to a similar question yesterday, with some additions that I did not provide yesterday.

You want me to provide it to [illegible]?

Q Yes, please.

A. Repeat the ones I listed yesterday?

Q For my benefit, if you would.

A. All right.

PRESIDING JUDGE: Excuse me. Is that piece of paper you are holding in your hand, Professor, something that was offered in evidence? Has it been received in evidence? Can you tell me, or --

A. No. These are notes I made right before last. I knew this question was coming, because counsel broached it earlier. I made notes so I could answer it.

PRESIDING JUDGE: So we do not have copies of that available for the parties? You will have to read it, is that correct?

THE WITNESS: Yes, sir.

PRESIDING JUDGE: Proceed.

MR. KOSLOFF: Your Honor, I would be happy to defer that question, if we could have a copy of that document for the record.

PRESIDING JUDGE: Obviously this is a handwritten document, unless you can defer until you receive it in the mail --

MR. MCINTOSH: Excuse me, your Honor. It appears these works are referred to in the bibliography. Perhaps

the last name of the author and some other brief identifications, is all Mr. Kosloff really needs.

We have given them a lengthy list of all of the materials.

PRESIDING JUDGE: What exhibit is that?

MR. MC INTOSH: I am not certain. It may be 6.

MR. TELLEEN: That exhibit has not yet been received, your Honor.

PRESIDING JUDGE: That is the one as to which there is a question?

MR. TELLEEN: Yes.

MR. MC INTOSH: Am I correct?

MS. DOIKESS: 11.

PRESIDING JUDGE: What is the bibliography? It is marked for identification as 11.

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MR. TELLEEN: Right.

PRESIDING JUDGE: Why don't you take that, Mr. Kosloff, and as Professor Collier refers to them you can check them off and ask any questions you need to.

MR. KOSLOFF: I would prefer if the witness would refer, just for reference, refer to that exhibit, the bibliography.

BY MR. KOSLOFF:

Q Would you just give the first name of

author, and last name, or any other way?

May we go off the record a moment?

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

Off the record, we developed a modus operandi for the handling of this bibliographical material.

Proceed, Mr. Kosloff.

MR. KOSLOFF: Thank you, your Honor.

BY MR. KOSLOFF:

Q Referring to page 3, lines 40-49 of your testimony, would you give me a listing of the specific documents by an abbreviated title, if you will, or author, however you wish, sufficient for purpose of identification, together with the page number and also indicate to me where that document can be found?

MR. TELLEEN: May I interrupt briefly, your Honor?

PRESIDING JUDGE: Yes, Mr. Telleen.

MR. TELLEEN: Since we are referring to -- I do not want to complicate the procedure that was worked out. But since this refers to an exhibit which at this point is merely marked for identification, has not been received, and conceivably might not be received in evidence in this proceeding, how might that affect what we are about to undertake?

PRESIDING JUDGE: You mean as to whether or not it is received in evidence?

MR. TELLEEN: Yes.

PRESIDING JUDGE: Let's take this without prejudice, whatever that means.

BY MR. KOSLOFF:

Q I would like the title, or author, as briefly as you wish, so we can understand what it is; the page number and where it can be found.

A I will provide citations that are in each case listed in a bibliography which I prepared which has been offered to the Court and has been received without prejudice.

PRESIDING JUDGE: It has not been received. It has been marked for identification.

THE WITNESS: Marked for identification without prejudice.

BY MR. KOSLOFF:

Q We will use it as a reference document, for my purpose.

A I will provide the author's last name and the volume and page number.

In cases where there is only a single copy of the work, I will provide the repository. If it is a book of which there are hundreds of copies, I will assume you

will find it in one of the repositories listed in the document to which I referred a minute ago.

The citations which you have requested information on are as follows:

Connecticut State Library, Archives, Finance and Currency, Series 2, Volume 1, Documents 57-a and 57-c.

Connecticut State Library, Archives, Industry, Series 1, Volume 2, Document No. 364.

MR. MC INTOSH: May I interrupt the witness a moment, your Honor? I have difficulty following this in Exhibit 11 for identification. It does not seem to tie in, alphabetically at least, with the authors.

PRESIDING JUDGE: Can you look at the third page from the end? Does that help?

MR. MC INTOSH: That may be my problem, your Honor.

It might be helpful to identify in some further fashion, Professor, to maybe be helpful to all of us.

THE WITNESS: The first two citations were to manuscript documents, official State of Connecticut documents, that are classified as part of the State Archival series. The name of the particular series I gave you.

BY MR. KOSLOFF:

Q Will you continue, please?

A The third citation for the point you ask be supported is Samuel Orcutt, Derby.

I provide the short title, because there are several books by Orcutt, the short title is "Derby." The page citation is 404.

The fourth citation in this series is Countryman , page 456. That citation in the series is Chastellux, volume 1, pages 83 and 84.

Next is Dwight, "Travels," volume 4, page 3.

The next three citations are in the category of negative evidence. That is, they do not say that boats did not use the Housatonic above Derby. What they say is that navigation stopped at Derby.

BY MR. KOSLOFF:

Q That is what you perceive they say?

A They say it in terms of a certain number of miles.

They are Dodge, Gazetteer, page 230.

Q Were you just directly quoting from that document?

A Was I just directly quoting?

Q Yes. When you inferred there was no navigation. You were not offering your comment just now in terms of a direct quote from the Gazetteer?

A. These Gazetteers say that --

Q. I don't care to know what they say, offhand. I just asked, were you directly quoting from the Gazetteer?

A. No. There are three citations of this negative sort. The next is Peace and Niles, page 6.

Barber, page 198.

Dwight, "Travels," volume 3, page 276.

That is the answer to that question.

Q. Thank you.

Referring now to page 3, line 50 of your direct testimony, will you give me the same listing of citations, the citations which allowed you to form the the opinions you stated in your testimony?

A. You mean beginning "The river was simply not large"?

Q. The direct testimony says " The river was simply not large or deep enough for boat navigation."

A. Yes.

Q. I would like a listing of the documents which convinced you of this.

A. I will provide you for that the direct quote: "In all its course through Berkshire County, the Housatonic, though not large and deep enough for boat navigation was an ~~extremely~~ exceedingly important stream for mill sites."

That is taken from Field, page 26.

Q. Would that document be found in any library?

A. Not any, but any major repository such as the Library of Congress.

Q. Do you have any other source of that sentence?

A. For that sentence, that is the source for that sentence.

Q. Do you have others?

A. I have other citations for the rest of that paragraph.

Q. That was my previous question.

Page 4, lines 4-7 of your direct testimony, you state "As early as the middle of the 19th Century there were a number of mill dams constructed on the river, evidencing a lack of prior use of the river by vessels and, of course, precluding any future use."

Would you give us a listing of the specific documents which persuaded you along those lines?

A. There are four of them: Smith. I think only one Smith, is in the bibliography. The short title is "Pittsfield," pages 29 through 34

Field, pages 13 through 21.

Taylor, page 352.

I should have said on Field there are two works. That is, Field's "Pittsfield" was the first. And now

I have Field, "Berkshire."

Q The earlier one was 'Berkshire ?'

A Yes. In this foot note I have both of Field's books represented. The first, "Riverfield," is page 13-21. The second is "Berkshire," page 10.

Q You are citing both for Fields?

A Yes.

Q Referring to your testimony on page 4, lines 16-17, you state that "Historical evidence shows that the river was tidal, and navigable only from its mouth at Stratford to Derby, where the tidal estuary ended."

Will you list the documents that persuaded you along those lines?

A That is the same series of citations I gave you that included the Gazeteers.

Q That is, listing all those documents you did in reference to your testimony on page 3, lines 48 and 49?

A The ones I said provide negative evidence.

Q Including Mouat, Gazetteer; Noble and Niles; Barber; and Dwight?

A Yes, sir, that is right.

Q Referring now to page 4, line 32 and line 33, there you state:"Nor is there any evidence that anyone was dependent on the river for transportation."

Will you list those documents which persuaded you to that conclusion?

A Yes. I am glad you asked that.

This is, first of all, obviously my opinion. I used the first person there, and said "I" assert and "I" daresay

Secondly --

Q No, I am referring specifically to the statement "Nor is there any evidence that anyone was dependent on the diver for transportation."

A You are asking me to list all the documents that I looked at and found no evidence in?

Q Fine. If that is --

A We will be here several days if you would like me to do that. I can start and do it.

Q Your answer, if I may interpret it, is that you do not cite any specific documentation of this other than your -- other than the negative conclusion you drew from researching the materials you indicate you did, in your bibliography?

A The reverse. I provided you with [illegible] some of which consist of hundreds of manuscripts where no such evidence was found. I have given you a list of 150 items where no such evidence was found. It is in the nature of negative research.

Q I do not care to get into that right now. But I think we have established that you found no specific documents -- you found no specific documents that say "There is no evidence that anyone was dependent on the river for transportation"?

No one says that in any of the documents you found?

A Well --

Q That is your conclusion, not based on any --

A A number of people said --

PRESIDING JUDGE: Excuse me.

Professor Collier, would it satisfy you if that statement is interpreted to read, instead of "There is no evidence " interpreted to read, "My extensive research has disclosed no evidence," and so forth?

THE WITNESS: Of course, I would consider that logical.

PRESIDING JUDGE: Would that satisfy you, Mr. Kosloff?

MR. KOSLOFF: Yes, it would, your Honor, yes.

PRESIDING JUDGE: Fine. Let's proceed.

BY MR. KOSLOFF:

Q Page 5, lines 1 - 4, "On the other hand, there is ample evidence to demonstrate that Housatonic boat navigations, with the minor exceptions described above, went no farther north than Derby."

What specific documents would you point to?

A This is not the same question you asked earlier?

Q I don't know.

A I would give the same four citations. That is, Morse and Morse, which --

Q I am to understand that those are the citations?

A Well, let me provide them.

Q Are they here or not here?

A I am going to provide you with citations for the material you asked for citations for.

Q All right.

A Morse and Morse "Gazetteer," page 330.

Pease and Niles, page 8.

Barber, page 198.

Dwight, "Travels," Volume 3, page 378.

On the fourth one that I have listed here -- will you bear with me a moment while I check the way I have that listed in my bibliography?

MR. KOSLOFF: Off the record for a moment, your Honor.

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

THE WITNESS: That concludes my answer to that question.

BY MR. KOSLOFF:

Q Incidentally, are any of the materials you have

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thus far cited in response to my examination of you, are any of those documents available through some public repository or available as a public document?

A I have access in my own library to about 30 rare books, one of which is the House "Gazetteer."

However, I am sure that that volume is available at Sterling Library at Yale, or the Library of Congress.

All the other things I cited here were found by me in public repositories.

MR. MC INTOSH: May I speak to the witness off the record just one moment?

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

MR. MC INTOSH: Your Honor, on behalf of Professor Collier I invite the Department of Environmental Protection Staff or any other interested parties to view these materials in Professor Collier's personal library to the extent that they are not readily available elsewhere.

PRESIDING JUDGE: Thank you.

BY MR. KOSLOFF:

Q Page 5, lines 13-15, that is your direct testimony, you state "Similar statements abound in archival materials at the Connecticut State Library and in local histories."

Can you give me the citations to those statements?

A That is the same set of four citations -- four citations, with which I answered your first question.

Q 6? --

A I count the C.F.L. Archives as 2.

Q I see. All right. Those are the "grounding terms"?

A Those are the ones I cited in my work sheets.

Q Referring to page 5, line 23 through line 28 of your testimony --

MR. KOSLOFF: I will withdraw that question, to save time.

BY MR. KOSLOFF:

Q Referring to your testimony on page 5, lines 33-37, you state, "A private effort to clear the river failed in 1762, due to the inordinate of the undertaking."

Can you give us the citations which led you to that conclusion?

A Yes, sir.

Orcutt, "Derby", page 305, Connecticut State Library, Archives, "Travel," series 1, volume 9, documents 60 and 61.

Connecticut State Library, Archives, "Lotteries and Divorces," series 1, volume 1, Document 54-A.

"For general treatment see Mitchell, page 24."

MR. KNICKERBOCKER: Your Honor, may I ask a clarifying question?

There are two Mitchells listed.

THE WITNESS: Oh, then, it should be Mitchell "Roads," for the short title.

Connecticut State Library --

BY MR. KOSLOFF:

Q I am sorry. Mitchell, page what?

A 24.

Q Thank you.

A Connecticut State Library, Archives, "Lotteries and Divorces," series 1, volume 1, Document 47.

Connecticut Colonial Records, volume 11, pages 530 and 531.

MR. KNICKERBOCKER: I cannot find that one in the bibliography the way you have listed it.

THE WITNESS: It should be Trumbull, "Connecticut." That is the way it usually is.

MR. KNICKERBOCKER: That is "Connecticut" --

THE WITNESS: "Public records of the Colony."

BY MR. KOSLOFF:

Q That is the title?

A Yes.

Q Where is that document located?

A These are published documents.

Q Where did you find the documents?

A I don't know where I found this, but there is a copy at Yale and there is a copy at the Connecticut State Library, and there is a copy at numerous repositories.

Q I don't find the reference.

A It is under "Connecticut."

MR. KNICKERBOCKER: It is on page 3, Mr. Kosloff.

MR. KOSLOFF: Thank you.

BY MR. KOSLOFF:

Q Will you continue?

A Continuing, Connecticut State Library, Archives, "Travel," Series 1, Volume 2, Document 60.

Connecticut State Library, Archives, "Trade and Maritime," Series 1, Volume 2, Document 67.

Public records of the Colony of Connecticut, Volume 12, page 600.

Connecticut State Library, Archives, "Lotteries and Divorces," Series 1, Volume 1, Document 27.

MR. KNICKERBOCKER: Excuse me, your Honor.

Dr. Collier, I do not find the immediately-preceding citation listed as you have it.

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Could you have meant --

THE WITNESS: Connecticut, "Public Records of the Colony of Connecticut" -- it is listed in the bibliography under "Connecticut."

BY MR. KOSLOFF:

Q. The last one you gave was Connecticut State Library Archives, "Lotteries and Divorces," document 27.

A. Connecticut State Library, Archives, "Travel," series 1, volume 2, document 62.

Connecticut State Library, Archives, "Lotteries and Divorces," series 1, volume 1, document 27.

Q. I think I have that.

A. Well, may I explain how I am doing this? It seems to me the only effective way to do it.

Q. Are these citations all to the conclusion that we are interested in?

A. These all, I believe, have to do with clearing obstructions, efforts that clear obstructions, that were fruitless.

Q. Yes; that is fine.

A. There are more.

The reason I just repeated that one in that in my working paper, I used different parts of the same document to make different points. So the citation appears

several times in sequence.

I have a number here to give you to support my point.

Q I would like them.

A Okay.

I will cite this one correctly this time: Connecticut, "Public Records of the Colony," volume 12, pages 285-286, volume 13, page 269.

Then I have "See also," so there must be supporting evidence, although it may be peripheral in another place. Which is: Connecticut, "Public Records of the State," volume 8, page 336-M, and pages 337 and 338.

Continuing, Connecticut State Library, Archives, "Trade and Maritime," series 2, volume 1, documents 75, 76, 77.

Connecticut, "Public Records of the State," volume 8, 362-M, pages 335, 336.

Anonymous: "Considerations." There are several anonymous entries, so I give you a short title: "Considerations," page 11.

Connecticut State Library, Archives, "Trade and Maritime," series 2, volume 1, documents 77 and 78.

That is the last one.

BY MR. KOSTOFF:

Q Your testimony at page 5, lines 28-30, do you have any written documentation or notes concerning this alleged conversation?

A I have nothing to add to my corrected rebuttal. Is this rebuttal, or direct?

Q This is your direct testimony.

A I have nothing to add to what was there after correction.

Q Do you have any written letters or anything, correspondence, from Mr. Herbst, regarding this?

A No; only what stands there.

Q Do you have any written notes at all concerning your conversation with Mr. Herbst?

A Yes. I have the pad paper on which I wrote notes as I talked to him on the telephone. That is, I wrote such notes and put them in my folder, and I hope they are still there.

Q Page 9, lines 15-17 --

A May I say something about Professor Herbst?

Q Not unless it relates specifically to whether or not you have the document in your possession which would help substantiate the statement you made. I don't care to get into it.

A I wanted to help you.

MR. ROSLOFF: I will ask his Honor to go off the record,

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so we can find out what that help is.

PRESIDING JUDGE: Mr. Kosloff asked you a question, you replied, I presume it was the question as to whether you kept notes.

Now, is this an expansion of your reply that you kept notes?

THE WITNESS: No, sir.

PRESIDING JUDGE: Do you wish to pursue it, Mr. Kosloff?

You may. If not, let us go on.

MR. KOSLOFF: No.

BY MR. KOSLOFF:

Q Referring to page 7, lines 16 and 17, do you have any documents or other written statements substantiating your interview with Mr. Howell, statements you make concerning your interview with Mr. Howell?

A Again, I have written notes of the interview.

Q You have no statement from Mr. Howell?

A In writing?

Q I mean, they are your notes rather than Mr. Howell's notes?

A I have a document that I believe are my notes, or a map, in which this information appears in his handwriting. He wrote it during our interview.

Q All right. Page 10, lines 23-25 of your

direct testimony --

MR. KOSLOFF: I will withdraw that question, your Honor.

BY MR. KOSLOFF:

Q Referring now to your testimony in rebuttal --

MR. MC INTOSH: Excuse me. Are you continuing with the same attempt to get citations?

MR. KOSLOFF: Yes. There are only a few more, another five minutes or so, and I will be finished.

MR. MC INTOSH: Fine. Excuse me.

PRESIDING JUDGE: Off the record.

(Discussion off the record.)

PRESIDNG JUDGE: On the record.

BY MR. KOSLOFF:

Q Referring to your testimony in rebuttal, Professor Collier, page 2, line 6, do you have any documents from Professor Hoyt which would substantiate your understanding or your opinion as to what he told you?

MR. MC INTOSH: Your Honor, before the witness responds, to this question, I think we are on some delicate ground. Counsel is referring now to testimony I have offered to withdraw. I do not think the witness at this point on testify in some manner which will be used by counsel to say we have waived any sort of privilege we may have in connection with the documentation which refers to

Professor Hoyt at some point, or at one point.

PRESIDING JUDGE: Let's allow the question without prejudice to your right to withdraw the testimony. If there were further testimony, then would not affect the waiver or withdrawal of waiver. I do not believe withdrawal additional matter would add or subtract anything to the situation without this.

MR. MC INTOSH: I have no objection to the witness' answering this question, which I assume he will answer "Yes" or "No." But I think we are getting into ground which is very delicate.

PRESIDING JUDGE: Let him answer.

BY MR. KOSLOFF:

Q Are you in possession of such a document?

A Yes.

Q What is that document? A letter?

A Yes.

Q Is it from Professor Hoyt to you?

A Yes.

Q Does it concern the general subject matter of jurisdiction of the Federal Power Commission in this matter?

A No.

Q What does it concern?

A It concerns his professional opinion as to

the adequacy of my work paper.

Q. Which work paper is that?

A. I think we have only discussed one, the work paper that I sent to him requesting his comments on it.

Q. Referring to your rebuttal testimony on page 7, line 33, do you have any documentation, any written statements, from Mr. Garner Holmes which would tend to corroborate the impressions you received as noted in your testimony?

A. No, sir.

Q. Any notes of your conversations with Mr. Garner Holmes?

A. Yes, sir.

Q. Your notes, not Mr. Holmes' notes?

A. Yes, my notes.

Q. Thank you very much for your time, Professor Collier.

MR. KOSLOFF: I have no further questions.

MR. MC INTOSH: May I have one moment off the record with the witness, your Honor?

PRESIDING JUDGE: Yes.

(Discussion off the record.)

PRESIDING JUDGE: On the record.

MR. McINTOSH: Your Honor, first of all I realize we have just imposed a Herculean task on the reporter and that the transcript as prepared may have some inadvertent errors in descriptions of some of the materials just referred to by the witness.

Anticipating that this could be a problem, I on behalf of the applicant would invite counsel to communicate directly with Professor Collier if they have any difficulty locating any of these materials.

If, for example, some of the numbers get garbled he will be glad to straighten it out. They need not go through me, Your Honor, to talk to the witness about this.

PRESIDING JUDGE: In addition, whether or not this is received as an exhibit I see no objection to giving the reporter a copy of the bibliography, to let her refer to it in order to get her reporting straight.

MR. McINTOSH: She has it, Your Honor.

PRESIDING JUDGE: That is right. What was Exhibit 11 for identification.

MR. McINTOSH: But I believe the bibliography may not have all the page references, and so forth.

If they do not seem intelligible in the record as written, I wanted to indicate counsel may communicate with the witness on that without going through me.

PRESIDING JUDGE: All right. Fine.

MR. KOSLOFF: Thank you very much.

PRESIDING JUDGE: That completes the cross-examination of Professor Collier, and before we go to redirect do we have a motion from you, Mr. Kosloff?

Have you changed your mind?

MR. KOSLOFF: I have changed my mind generally, about it. If for any reason these documents are not in fact available as we have testified that they are generally available, if for any reason Professor Collier fails to cooperate as to proffering of these documents I think you will hear from me. Other than that I have no motions to make at this time concerning them.

PRESIDING JUDGE: Very good.

Mr. Telleen, do we still have your motion? You will still act at a future time?

MR. McINTOSH: Your Honor, excuse me. I believe the witness wants to comment on Mr. Kosloff's last remarks.

PRESIDING JUDGE: You mean about failure to cooperate?

THE WITNESS: No, sir. About access to materials.

PRESIDING JUDGE: Oh.

THE WITNESS: The DEP last summer sent an undergraduate out to do some work. Some repositories do not permit undergraduates to use the materials. The Yale Historical Manuscripts Room is one. You should be advised that someone who at least looks like an adult --

MR. KOSLOFF: May we have this off the record, please,

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Your Honor? I did not ask for that.

PRESIDING JUDGE: That is all right. There is no harm done. He will get someone who looks like an over-graduate.

Thank you.

MR. McINTOSH: One more remark before Mr. Tolleen makes his remarks:

That is, I think we have been totally candid and open as to the materials that have been referred to, and as to access to them. I don't know whether Mr. Kosloff feels by virtue of the questions and answers we have offered them access to any of the personal notes of Professor Collier. We have not intended to do so. I have not understood this as a request to look at his personal notes. If it is, I would like to hear that. If not, no harm is done.

MR. KOSLOFF: You mean in terms of his working papers?

MR. McINTOSH: Yes, sir.

MR. KOSLOFF: Frankly, yes. I do have a motion.

PRESIDING JUDGE: All right. State your motion.

MR. KOSLOFF: I move that the applicant here be compelled to produce all these documents, rather, specifically the working papers of Professor Collier which he used in developing his research in this matter.

PRESIDING JUDGE: I think you will have to be a little more specific as to what you are referring to as "working papers."

Are you referring to the papers that he referred to in his recitation of the bibliography in reply to your question as to whether he had any documentation?

MR. KOSLOFF: Yes; with respect to the areas of concern, the specific areas of concern --

PRESIDING JUDGE: Mr. Kosloff, the "areas of concern" is a very general statement as to which your conclusion may be very, very different from Professor Collier's or anybody else's.

MR. KOSLOFF: Yes, Your Honor.

Then, those working papers which he used, or prepared in connection with the testimony -- shall I refer specifically to pages?

PRESIDING JUDGE: You better specify each document that you include in the term "working papers."

MR. KOSLOFF: Any and all working papers prepared by Dr. Collier or any of his associates under his direction relating to the testimony which he offered, referring first to direct testimony, page 3, lines 48-49; page 3 line 50; page 4, lines 4 through 7, page 4, lines 16 through 17; page 5, lines 1 thru 4; page 5, line 13 thru line 15; page 5, lines 35 thru 37; page 6, lines 46 thru 50; page 7, lines 16 thru 17.

Now, on rebuttal testimony: Page 2, line 44; page 7, line 33.

PRESIDING JUDGE: Mr. Kosloff, when you brief this question I will expect you to specify the document you want, not in general terms as you have done here in relation to specific items of testimony, but the specific documents; for example, Professor Collier testified that he made notes of a conversation with a certain individual. I will expect you to specify that particular document, if that is what you want, and to justify with respect to each document that you seek to have produced, in your brief.

Now, Mr. Wolleen.

MR. WOLLEEN: May I have a moment, Your Honor, please?

PRESIDING JUDGE: Yes.

MR. WOLLEEN: Your Honor, it is my understanding that we have not yet taken up the overriding issue of the entire exhibit which Dr. Collier has presented. We have discussed parts of it, but that issue is not before us at this time.

PRESIDING JUDGE: The question of admissibility? I suppose we will get to it. If we are ready now I am quite willing to hear it now.

MR. WOLLEEN: Before we discuss that, I want to say my motion of this morning for production of the specific workpaper Professor Collier gave Professor Hoyt remains.

PRESIDING JUDGE: Well, yes. I assumed that was the only thing we were interested in, until Mr. Kosloff expanded

the problem with an almost dragnet request for additional papers.

MR. KOSLOFF: May I be heard, Your Honor?

PRESIDING JUDGE: Just a moment, Mr. Kosloff.

Your motion stands?

MR. MILLER: As to the specific workpaper given --

PRESIDING JUDGE: The draft Professor Collier identified he should go to Professor Hoyt.

MR. MILLER: Yes.

PRESIDING JUDGE: Mr. Kosloff.

MR. KOSLOFF: In all honesty, Your Honor, I feel at this time that I do not have to make that first limited request.

PRESIDING JUDGE: Are you joining in the motion Mr. Miller has made?

MR. KOSLOFF: No, Your Honor. I want to separate that completely from my motion, my previous motion.

I think I do not have to make that motion at this time, upon reconsideration I withdraw that motion in its entirety.

PRESIDING JUDGE: Very good.

Is this an appropriate time to consider the admissibility of the exhibits? You have additional cross-examination?

MR. MILLER: Right, Your Honor. But as to the specific testimony, direct and rebuttal, we have not had an adjustment or recross.

PRESIDING JUDGE: I know that. You prefer to wait for

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that before we get to the question of admissibility?

MR. TELLEEN: I think it might be logical to finish the redirect, then discuss exhibits.

PRESIDING JUDGE: All right.

Very well.

Mr. McIntosh.

MR. KOSLOFF: Your Honor, in my hurry to withdraw my earlier motion I made a clean slate.

However, I do want to go on record as joining in the Federal Power Commission's motion for the production of the specific documents in question relating to Professor Hoyt.

PRESIDING JUDGE: As I understand it, it is one specific document.

MR. KOSLOFF: Yes, Your Honor.

PRESIDING JUDGE: That was requested by Professor Collier to Professor Hoyt.

MR. KOSLOFF: Yes, Your Honor. We join in that motion.

PRESIDING JUDGE: We will recognize you as joining in Mr. Telleen's motion, and you may file a brief.

MR. BENEDIKT: I also join.

PRESIDING JUDGE: Mr. Benedikt joins in the motion also. That makes it almost unanimous.

REDIRECT EXAMINATION

BY MR. McINTOSH:

Q Professor Collier, in response to an inquiry from

Mr. Telleen you referred to the movement of vessels on the lower reaches of the Housatonic River. Do you recall that?

A. Yes, sir.

Q. I believe in response to his question you mentioned the draught of fully-laden vessels at 6 feet. Is that correct, sir?

A. Yes.

Q. Did you mean by that answer that that was an average depth or maximum depth of the water drawn by those ships?

A. That was the maximum for the era with which I was dealing, which was the late 18th and early 19th Centuries.

Q. Were there vessels with lesser draught?

A. Yes.

Q. How much water would those vessels have drawn?

A. They would range all the way down to scows, just a few inches, unladen, and only a few inches when laden.

Q. In response to a question by Mr. Telleen regarding masting in Connecticut, I believe you replied it was your opinion there has been no masting in Connecticut for ships of the Royal Navy, is that correct, sir?

A. That is correct.

Q. Was there any other type of masting activity in the State of Connecticut?

A. Yes.

Q. What was that, sir; will you explain?

A. There was probably masting for smaller ships -- sloops, small schooners, barges, what they call "skiffs."

These masts would be, probably at the longest, no longer than 60 feet. It is likely, although I have not seen direct evidence, that this masting used any waters, it is likely these masts were floated down the Connecticut River. I have seen no evidence that they were floated down the Housatonic River, and I have indicated before that we do not believe they were.

There was not nearly so much masting as I generally believed. A lot of the belief about masting comes from the presence of what people called "mast swamps." The term "mast swamp" apparently was applied to stands of ~~light~~ white pines. There are at least four places I know of, four towns that have in them mast swamps. There is no evidence that I have seen that masts were in fact taken from these swamps, although I certainly would not dispute the contention that masts were taken from these places.

There is certainly no evidence that I have been able to uncover -- and I have looked for it diligently -- for masting down the Housatonic River in connection with these mast swamps.

Q. Professor Collier, you referred to at least four towns in Connecticut that had localities designated as "mast swamps". Is that correct, they were all in Connecticut,

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sir?

A Yes.

Q Mr. Telleen asked you several questions regarding newspaper research or reviews you had done. Do you recall that, sir?

A Yes.

Q You referred to newspapers in Litchfield and Berkshire Counties, is that correct, sir?

A That is correct.

Q Would you amplify your remarks of what you meant by "Berkshire County"?

A As it originally existed, Berkshire County consisted of the entire western section of Massachusetts which now has been divided up in at least three counties, now including Hampden and Hampshire Counties, as well.

Q When you reviewed those newspapers what were you looking for?

A When I began this project I assumed that logging operations occurred on the Housatonic, so I was looking for evidence of logging operations, either masting or logging for other purposes.

I assumed I would find them very quickly, file my evidence, file my report, I should say, and wind up my project and go back to my more pleasant duties.

I discovered that I just could not find any such comment.

I was looking for three sorts of things: Advertisement of water travel of any kind or accounts of water travel of any kind;

I was looking for accounts of logging on the waters; and I was looking for accounts of -- what would you call them? -- human-interest stories that might be newsworthy, that involved transportation uses of the water.

Q. Did you find, as you looked at these newspapers, that events were reported regarding other forms of transportation?

A. Yes. There are advertisements for stage coach -- there are stage coach schedules, there are advertisements for people who did carting and hauling, there are advertisements for commodities brought from towns overland. So there was ample evidence that the newspapers did deal with transportation questions.

Q. Now, Professor Collier, the newspapers that you looked at in Litchfield and Berkshire Counties, were those newspapers which carried reports of activities in the towns along the Housatonic River?

A. I believe that the Litchfield papers that I used were in fact county-wide papers. I believe "Litchfield" in their title referred to the county of Litchfield, not the town of Litchfield. They carried news from all over. And by "all over" I mean they carried European news, they carried news from all over the United States, they carried news from

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neighboring communities and neighboring states.

Q So if in your opinion, Dr. Collier, there were activities along the river of the type you were looking for, you would have found them reported in these newspapers?

Is that correct, sir?

A. Yes, sir.

Q. In response to cross-examination by Mr. Kosloff, Professor Collier, you stated that you were aware of ferrying activities at Cornwall and at Newtown, is that correct, sir?

A. Yes.

Q. Is there anything further you wish to state about those ferrying activities?

A. I believe the question was asked in the context of my statement that I did not believe anyone made a living from the navigation of this river.

I have not looked into the account books of these ferries. However, it was customary in Connecticut in the late 18th and early 19th Centuries for ferrying to be a sideline. Ferry operators were usually a farmer or someone who lived nearby and this would not be his sole means of support.

These ferries, of course, did not go up and down the rivers. They went directly across the rivers, and dealt with the river not so much as an aid to navigaton but rather as an impediment to travel.

Q. Mr. Kosloff questioned you regarding a statement, on

page 7 of your direct testimony, at lines 16 and 17, and a personal interview you had with a Mr. Howell.

Will you please identify Mr. Howell further, so if Mr. Kosloff wants to interview that gentleman he may?

A. Mr. Kenneth Howell, of Washington, Connecticut.

MR. McINTOSH: Your Honor, I believe that completes my redirect examination.

PRESIDING JUDGE: Mr. Knickerbocker seems to have something.

MR. McINTOSH: Your Honor, I believe I have one more bit of information to extract from this witness, which is not intended to be anything other than helpful to Mr. Kosloff, however.

I would like to ask Professor Collier if he can further identify by address or otherwise Mr. Garner Holmes, referred to on page 7 of his rebuttal testimony, line 33. That gentleman was the subject of inquiry by Mr. Kosloff.

THE WITNESS: Mr. Holmes is the President of the Cornwall Historical Society and lives in Cornwall.

PRESIDING JUDGE: Thank you, Mr. McIntosh.

Let us recess until 3:15.

(Whereupon, at 3:02 p.m., a recess was taken to 3:15 p.m.)

(After recess.)

PRESIDING JUDGE: Let's go on the record.

Mr. Telleen, do you have recross?

MR. TELLEEN: Yes, your Honor.

RECROSS EXAMINATION

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BY MR. TELLEEN:

Q Professor Collier, on redirect you mentioned the building of sloops, small schooners, skiffs. Were such boats built in Derby?

A Yes.

MR. TELLEEN: That is all, your Honor.

PRESIDING JUDGE: Mr. Kosloff?

MR. KOSLOFF: No recross, your Honor.

PRESIDING JUDGE: Mrs. Boikess?

MS. BOIKESS: No questions, your Honor.

PRESIDING JUDGE: Any further recross?

You have nothing, Mr. Benedikt?

MR. BENEDIKT: No, further redirect?

MR. MC INTOSH: No, sir.

PRESIDING JUDGE: Something to be devoutly grateful for.

Thank you very much, Professor Collier.

(Witness excused.)

PRESIDING JUDGE: That completes the Applicant's case, I presume.

MR. MC INTOSH: It does, your Honor. I believe we have presented all our witnesses for cross-examination and that the cross-examination has been completed.

PRESIDING JUDGE: Unless you have something you want to discuss we can go to the question of the exhibits.

MR. MC INTOSH: I think that is entirely appropriate, your Honor.

MR. TELLEEN: Your Honor.

PRESIDING JUDGE: Yes.

MR. TELLEEN: Before discussion of the exhibits should we deal with possible motions as to the testimony of Professor Collier?

PRESIDING JUDGE: That would be in order, I presume.

Mr. Benedikt, do you have a motion?

MR. BENEDIKT: I feel on page 9 of Professor Collier's rebuttal, lines 28-40, they are of such nature as to question the personnal veracity of myself, of Candlewood Lake Defense Association in presenting certain quotations from the press concerning Mr. Swigart, president of the Shepaug Valley Archeological Society. They are the founders of the American Indian Institute. They have just broken ground to be finished. They are also the publisher of the quarterly, "Artifacts," an archeological magazine of American Indian pre-history.

Because of the fact that it was presented in such manner as to question personal veracity and diligence in bringing to the attention of his Honor for equitable consideration the facts so stated, I move that that be expunged and that as part of the testimony presented by us we should be permitted to include as an exhibit those facts on which we based our statements, for whatever they are worth.

PRESIDING JUDGE: Do you have copies of the paper to which you are referring, for distribution?

MR. BENEDIKT: I have, your Honor.

PRESIDING JUDGE: Will you distribute them, please?

(Mr. Benedikt distributes documents.)

PRESIDING JUDGE: I suppose it is premature to ask whether you would object to the receipt of this paper as an exhibit; am I correct?

MR. MC INTOSH: I am confused by the document just distributed by Mr. Benedikt. I don't believe it is the article in the Danbury News-Times to which the testimony relates.

MR. BENEDIKT: It is. The article is included, as well as other things relating to Mr. Swigart.

PRESIDING JUDGE: Can you now state whether you object to introduction of this as an exhibit?

MR. MC INTOSH: May I have a moment, your Honor?

PRESIDING JUDGE: Yes.

While we are waiting for the reply to my question, I might inform you that as I read Professor Collier's rebuttal testimony, Mr. Benedikt, he has said nothing in derogation of Mr. Zwigart's veracity.

MR. BENEDIKT: Mine, mine.

PRESIDING JUDGE: No. Nor has he said anything in derogation of your veracity. He has attacked the competence of Mr. Zwigart, which is quite different from an attack on his veracity.

I don't know how much, if at all, that diminishes your being exercised over the rebuttal testimony.

We have an expert, in the body of Professor Collier, commenting on the competence of another expert. That has nothing to do with veracity.

However, we will await word from Mr. Mc Intosh as to whether he objects to the introduction of this as an exhibit.

MR. MC INTOSH: Your Honor, I think I understand the basis for Mr. Benedikt's concern. And it is not -- I agree with your Honor -- an attack on the veracity of anyone.

Rather, it is, as you pointed out, a criticism of the competency of this particular person to give a certain opinion.

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Secondly, your Honor, I think the problem arises from the fact that the paper is not mis-reported by Mr. Benedikt, rather the paper itself is in error, and the paper carried this report of Dr. Zwigart's work. I don't believe the newspaper article is a correct report of the work done by this gentleman. And I think that is the thrust of the testimony.

PRESIDING JUDGE: Then I take it you do object to having this as an exhibit?

MR. MC INTOSH: I do, your Honor. I do not see its relevancy or materiality.

MR. BENEDIKT: Your Honor, I feel also in attacking the competence of Mr. Zwigart, it was done also in a demeaning manner and that there should be an opportunity to in some way bring to your Honor's attention, by reference, by exhibit, however you decide, that this man is a person of accomplishment, he does marvelous work; and I don't think there should exist public documents demeaning him, without the opportunity of rehabilitation.

PRESIDING JUDGE: As I have already indicated to you, Mr. Benedikt, I do not regard this as an attack on the credibility of Mr. Zwigart.

Mr. McIntosh has corrected me, it is not an attack on Mr. Zwigart at all; it is a question of the credibility of the report in the newspaper, or in this document

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called "Artifacts" that you have submitted to me.

However, I will ask Professor Collier to return to the stand, and I will ask him a question or two about this paper.

CHRISTOPHER COLLIER

recalled to the stand, having been previously duly sworn, resumed to testify further as follows:

PRESIDING JUDGE: Professor Collier, Mr. Benedikt has distributed copies of a paper headed "Artifacts," apparently a publication of the Shepaug Valley Archeological Society. It is volume 3, number 1, September 1974.

You have this document before you, that is, you have a not particularly good reproduction of it.

I will give you a better printed copy, and ask you whether you would be able at this point to comment on the matter which you discussed at page 9 of your rebuttal testimony in which you mentioned that you did not regard Mr. Swigart as being a competent source.

Will you take the better copy and perhaps give us the benefit of your comments?

THE WITNESS: I am not sure what part of this is relevant. If you will give me a moment I will read it.

PRESIDING JUDGE: Surely. Take your time.

Is that the portion headed "Housatonic," then blurred out?

MR. BENEDIKT: It is "Housatonic." I have the original article here.

THE WITNESS: Your Honor, we are talking about two different things.

I believe the statement I made about Mr. Zwigart's being incompetent is not -- I said I do not believe Mr. Edmund Zwigart is a competent source.

Mr. Zwigart is not an archeologist, he has no formal training in archeology. He is sort of -- not "sort of," he is distinctly an amateur archeologist who promotes the study of popular archeology.

Now, the second point has to do with the matter of boat stones. The intervenor that I had dealt with in this paragraph was Mr. Benedikt. Mr. Benedikt has used this quotation, "Old drawings on stone of boats with keels," as having been reported in the Danbury News-Times.

I consulted with two archeologists, one a State archeologist of Connecticut, another a graduate student at Yale doing work with Connecticut Indians. They said they had never heard of such a thing and that I must be confused, I must be talking not about boats with keels but stone boats. But I was advised to confer directly with Edmund Zwigart.

I called Szwigart and quoted to him the material from Mr. Benedikt's brief. He replied that there was a confusion. He had not said that he had found old drawings on stone of boats with keels.

He said, rather, that these were carved stones called "boat stones" because their shape resembles modern keeled boats.

Then I attempted to discover if the misinterpretation were that of Mr. Benedikt or that of the Danbury News-Times, and I managed to get hold of the original from which this Xerox was made and discovered the confusion was on the part of the Danbury News-Times.

So I think we are dealing with two points: (a) the professional competence of Mr. Szwigart as an archeologist, and (b) the source of misunderstanding as to what he meant when he talked about "boat stones."

PRESIDING JUDGE: I am not quite sure I got your distinction with respect to the boat stones.

THE WITNESS: The Danbury News-Times claims that what were found were old drawings on stone, of boats with keels. And that is the confusion. In fact what were found were stones in the shape of boats with keels, that are not in any way necessarily related to boats but are called "boat stones" because they resemble that shape.

PRESIDING JUDGE: Were these man-made or man-

defined stones, or were these natural stones that happened to have that shape?

THE WITNESS: Please understand that I am not an archeologist and would not pretend to make any archeological judgements.

It is my understanding from the three archeologists whom I consulted that these were naturally-shaped stones that were used as tokens of some kind by the Indians and were found in their burial places.

PRESIDING JUDGE: In other words, they were quite small stones, they were not themselves stones that were used in boats?

THE WITNESS: They were small enough to clutch in the hand.

PRESIDING JUDGE: All right.

Any questions, Mr. Benedikt?

MR. BENEDIKT: Well, I do know that the statement was made there that they had come from as far away as Ohio. And that also betokens some sort of travel, of course.

There is also a statement in the Indian material that Indians only lived in these pre-history 4,000-year-ago times to the ages of 16 and 18. So they must have been doing some traveling to get all the way over to the Housatonic from Ohio.

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PRESIDING JUDGE: Let us consider that statement of Mr. Benedikt's as a question.

Could you comment on that in any way?

THE WITNESS: No, sir. That is all archeological material with which I have no direct familiarity.

FURTHER CROSS EXAMINATION

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BY MR. BENEDIKT:

Q. We had at the ground-breaking study of our American Indian Institute in June a Dr. Michael D. Coe, Professor of Anthropology at Yale University and curator of Anthropology at Peabody Museum, coming there to help them at a place where Dr. Zwigart is president.

Would you then feel Dr. Coe would associate himself with somebody in archeological endeavor, whom he considered incompetent?

A. Is that a question?

Q. Yes.

A. I should correct you; it is Mr. Zwigart, not Doctor Zwigart.

Q. Excuse me. It is a Freudian slip. I have a great respect for the man.

A. I did not discuss the competence of the archeological project. I discussed the competence of Mr. Zwigart to make archeolgoical judgments.

Q. Is he the president of an organization that has quite a lengthy list of directors, including the

same Professor Coe?

A. He is not only president, but I understand he is also the founder.

Q. In other words, Dr. Coe is willing to serve on the same board of directors with him?

A. I would not deny that.

MR. BENEDIKT: That is all I want to ask.

PRESIDING JUDGE: Thank you very much, Professor Collier.

(Witness excused.)

PRESIDNG JUDGE: You can take these back, Mr. Benedikt.

Do we have anything before we reach the question of admissibility of the exhibits?

MR. TELLEEN: Yes, your Honor.

The Staff has either one motion to strike as relates to 3 or 4 specific parts of Mr. Collier's direct and rebuttal, or we can make them as separate Motions.

PRESIDING JUDGE: As you wish.

You are making a motion. Let's consider them piecemeal.

MR. TELLEEN: All right.

The Motion to strike is based on the same essential ground, and that is at several places in Professor Collier's testimony he makes reference to Telephone

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conversations, or conversations with other persons not witnesses in this proceeding or not parties to this proceeding. He reports the opinions of those other persons in this prepared testimony.

It is the Staff's contention that this type of prepared testimony goes beyond the normal bounds of liberalness in the administrative proceedings as to the hearsay objection. They are not, for example, reports of factual comments by others, made to the witness.

For example, at page 9 of Professor Collier's testimony at line 32, he refers to Mr. Zwigart and reports a telephone conversation in which, as I read it, Mr. Zwigart reported a factual condition. It is that type of pure --

PRESIDING JUDGE: I want more than "types"; I want to discuss each particular item you are addressing yourself to. I do not regard this one as typical, and in view of the treatment accorded Mr. Benedikt with respect to this very item I am going to overrule your objection with respect to the conversation, reported conversation, with Mr. Zwigart.

MR. TELLEEN: I want to correct myself, if I was misunderstood. I was not moving Mr. Zwigart's conversation on the phone with Mr. Collier be stricken. That was an example of the type of conversation I think

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would be within the bounds of liberalness ity in administrative rules as to the hearsay objection.

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PRESIDING JUDGE: Give me the particular portions you want stricken.

MR. TELLEEN: I will list the specific portions I move to strike in Professor Collier's directed testimony. The Staff moves to strike that portion of page 5 contained in lines 46 through 50. As to a conversation with Mr. Herbst.

PRESIDNG JUDGE: I will hear from you, Mr. McIntosh.

MR. MC INTOSH: This is not the best type of evidence, I confess. However, I think the objection -- I have actually heard no objection with regard to it except a genral reference to the fact that this is a telephone conversation or an interview which produced a statement cited here.

I think the objection goes to the weight you or the Commission may want to give this evidence. But it is a fact that the witness testified under oath that he had this conversation with the gentleman who holds this position, who is a professor in this field.

I feel it is probably not terribly persuasive of the facts alleged therein, but I think it is perfectly competent to come in.

PRESIDING JUDGE: I am going to sustain the motion to strike 47 through 50 of page 5 of Professor Collier's direct testimony.

However, I will state that, as I think may become apparent with respect to some of your other objections, we are in an area in which a great deal of the evidence is necessarily from what would in the ordinary law case be regarded as the best evidence. When you object or wish to strike portions of the evidence, keep that in mind and show me how this particular piece of evidence really differs from the general run of evidence that we do admit that would otherwise come within the hearsay rule.

MR. MC INTOSH: Your Honor, looking at this particular portion of the direct testimony I do not believe it is going to form an extensive portion of our brief. However, I will make an offer of proof.

PRESIDING JUDGE: Very good.

MR. TELLEEN: As to page 7 of Professor Collier's direct testimony, the sentence beginning at line 15, which starts "In a personal interview Mr. Howell," and ends at the end of line 17, I move to strike this, again on the ground that it represents an opinion of Mr. Howell which is reported to us through Dr. or Professor, Collier's testimony.

If I may elaborate, without in any way suggesting bad intent by either one of the participants, I think it is quite possible that any time we deal with something like a telephone conversation we have someone in ....

Professor Collier's position explaining the situation, someone else perceives it, forms an opinion, reports to Professor Collier, and he in turn reports that in his testimony. I suggest there are too many, shall I say, breaks in the chain of information. This is an example of something we believe should be stricken.

PRESIDING JUDGE: Mr. McIntosh, is there an earlier reference to Mr. Howell?

MR. MC INTOSH: Yes, your Honor. On the preceding page Howell is identified as the author of a book, "Empire Over the Dam," which the witness described in his testimony as the best and most authoritative instance of overland transportation in the Housatonic River Valley." This is on lines 35 --

PRESIDING JUDGE: Yes, I have it, Mr. McIntosh.

Basically, I suppose the objection to this type of hearsay testimony is that counsel is deprived of the opportunity to cross examine the witness.

Nevertheless, so much reliance is placed on history materials as to which there is no possibility of cross-examination, and indeed, well, I should say, on the other hand, one might ask for the opportunity to cross-examine the authors of "Empire Over the Dam," with respect to their historical writings. But I think that would be pressing a little bit too hard on the hearsay rule.

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In the circumstances of this paragraph, I am going to overrule the objection, on the ground that Mr. Howell's reference work has been cited, it has not been objected to, and I do not believe leaving this statement in will be particularly prejudicial. I will overrule the objection.

MR. TELLEEN: Thank you, your Honor.

Turning to the rebuttal testimony of Professor Collier, at page 7 at line 32, the sentence beginiing "My impression has been confirmed," and the sentence ends at line 34.

Like same objection, your Honor, we belive that again this is an example of Professor Collier's contacting a third party, discussing a situation with him, that person forming his own thoughts and commnnicating them to Professor Collier, and in turn that is reported in his testimony.

MR. MC INTOSH: I do not wish to interrupt Mr. Telleen,your Honor. But we have no objection to that being stricken.

PRESIDING JUDGE: I was going to grant that motion.

MR. TELLEEN: The sentence to be stricken is at page 7 of Professor Collier's rebuttal testimony, at line 32, the sentence "My impression has been confirmed in a telephone interview with Mr. Garner Holmes of the Cornwall

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Mistgorical Society."

I guess the date of September 4, 1974, would be added to that, to be stricken.

MR. MC INTOSH: We have no objection to that. We would leave for the record the furnishing of the address of Mr. Holmes and invite counsel to confer with him if they care to.

MR. TELLEEN: I have no other motions to strike.

PRESIDING JUDGE: Let's get to the exhibits now.

There was the item by reference identified as Item D, relating I think, to bridges over navigable rivers.

Was it you, or who reserved an objection to that?

MR. MC INTOSH: Your Honor, I am not certain, but that is a document of which we did not have a copy to furnish to counsel at the time we originally asked that it be marked. We did so subsequently.

I do not believe I have heard expressed objection to it.

PRESIDNG JUDGE: Do we have it now?

MR. MC INTOSH: I believe we furnished copies to everyone the first day, your Honor.

PRESIDNG JUDGE: Oh, yes, I remember now. There was an item marked with what looked like an "A", that was really a "D".

MR. TELLEEN: Yes, your Honor. The record of Tuesday

speaks to that being received. That was item by Reference "D", marked for identification and received in evidence.

PRESIDING JUDGE: It was received in evidence?

MR. TELLEEN: That is stated on page 72 of the record.

MR. MC INTOSH: If there is any doubt, is it now received in evidence, your Honor?

PRESIDING JUDGE: It is received in evidence.

Then we have only the one, the item, or exhibit, marked as Exhibit No. 11, the bibliography.

Who objected to that? Or who reserved objection?

Was that you, Mr. Telleen?

MR. TELLEEN: I did, your Honor.

PRESIDING JUDGE: I will hear from you.

MR. TELLEEN: Your Honor, today Mr.Kosloff has been able receive certain specific data from Professor Collier as to availability of resources, references, page numbers, and so forth. They related to specific parts of Professor Collier's testimony.

In addition, Professor Collier has in his direct and rebuttal testimony at certain places specifically noted his sources. He has also done this at certain times during the course of his oral examination, although as to these last two conditions, the references were often without

page reference or location of the source.

At this time the matter of the whole exhibit and whether or not it should be in the record remains to be decided. As we said earlier, your Honor, it was not until November 11, 1974, that we were served with the lengthy bibliography here at issue. As a result, I would request that sufficient time be set for the Staff to study materials listed in the bibliography.

I would also request Professor Collier's assistance in obtaining such materials, should his assistance be required. For example, if some of the materials he mentions as being very fragile, or locked in a vault, are desired, it is conceivable that the best possible way to examine those, perhaps not firsthand, would be through his personal work notes as to those specific instances.

I think along with this, your Honor, goes our request for the privilege of recalling Professor Collier at a later date after such examination might take place.

PRESIDNG JUDGE: Let me see if I understand you, Mr. Telleen:

You are not objecting to receiving Exhibit 11 for identification in evidence. You want certain rights with respect to whatever research you may find appropriate.

I understand Professor Collier will be here on

January 7, 1975, and, of course, we can submit him to re-cross examination if need be.

In these circumstances I will receive Exhibit 11 for identification in evidence as Exhibit 11, subject to your right to move to strike in the event that you find that you have been unable to obtain the cooperation that you think is necessary for you to do the appropriate research job.

MR. MC INTOSH: May I be heard on this?

PRESIDING JUDGE: Yes.

MR. MC INTOSH: Your Honor, I find the situation somewhat extraordinary. These materials are as available to the government of the United States acting through the Staff of the Federal Power Commission as they are to Professor Collier, certainly. They have been available for a great number of months. They are not secret documents; they are public documents for the most part, held in repositories available to persons of proper standing. And I am sure the Staff of the Federal Power Commission has such persons available to examine them.

I consider it rather extraordinary that at this late date the Staff seems to feel that we or Professor Collier have some obligation to do their work for them.

Exhibit 11 was offered in evidence to describe the scope and character of the research Professor Collier

did preparatory to giving his testimony in this proceeding. That is the purpose for which it had been placed in evidence. I think it amply shows the work that was done by the Professor.

I don't think we have any objection to correct fragile documents, supply notes, or so anything else with respect to these materials. They are as available to other counsel as they are to us, to their consultants as they are to ours.

Although we have been, I think perhaps overly generous in our spirit of cooperation here, I question the propriety of giving any party a hunting license to go through the files of the Professor to demand his time or attention rather than doing their own work.

PRESIDING JUDGE: Let me clarify some points.

Item 1: I think we have touched on this before, that Professor Collier lists a bibliography, which he, I think, is quite entitled to do. The Staff and the other parties are entitled to know what he relied on.

Now, they may have seen the very same materials, but they may not have; but it is important, it seems to me, for them to focus on the sources that he used.

So it is not sufficient to say that the Staff and other parties have had months in which to do whatever research was necessary. They have not had months in which

to know what materials Professor Collier relied upon. To give you a far-out illustration, if Professor Collier had happened to look at Joe Miller's Joke Book and found something there, you would not expect Staff on its own necessarily to look at Joe Miller's Joke Book.

I admit it is a far-fetched analogy, and I don't think we need debate the point.

MR. MC INTOSH: No, I was going to say if he had used it and cited it in his bibliography they would look at it, and not want his notes. Right.

That brings me to the second point: I do not expect the Staff or any party to come to Professor Collier for material that is available.

I understood Professor Collier to testify that there were some things that are not quite available. I don't know which they are.

MR. MC INTOSH: Excuse me, your Honor. All of the materials, I understand, are available to any competent person who wishes to go to the archives or the record-keeping installations where they are.

What I guess upsets me is that the Staff seeks to do its work here in Washington and not go out in the field where these records are to put in the time and effort Professor Collier put in to go to the original sources of this information, and they want to rely on

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other techniques to gather information.

They can go to Worcester, to Litchfield, to Berkshire County. That is where the documents are. They can look at them, and they will not be closed to them. If for any reason, the doors are not open to them, we will do all in our power to open the doors for them, the same as they were opened for Dr. Collier.

But I don't believe that will be the case.

PRESIDING JUDGE: Do you care to respond?

MR. TEILEEN: Yes. I want to make it very clear the Staff has worked diligently for many months on the issue confronting us now. That search has taken place here at the Commission and at the Library of Congress, essentially.

You say the sources listed in Professor Collier's bibliography have been know to us. That has been so only in the very most general sense, that they existed. They were not specifically listed, pointed out or made available to the parties in this proceeding until a few days ago.

PRESIDING JUDGE: I am satisfied as to that point How about the availability of the material and the circumstances in which you propose to call on Professor Collier for assistance?

MR. TEILEEN: What I was referring to -- and this is

something we will have to discuss, I would think -- is to getting some focus, that would be one specific thing we could ask Professor Collier before we start spending time looking through 150 references, or parts of 150 references. I would think, for example, he knows precisely, in Catherine Abbott's work, for example, whether he relied on many pages or found nothing.

We may or may not want to look at at Catherine Abbott's book. It would certainly be most helpful if we had an idea of the specific items he lists.

I think Mr. McIntosh loses sight of the fact that the essence of an inquiry like this is as to the historical record as it exists. That is the reason for our request for sufficient time to at least make an attempt at reviewing the materials Professor Collier lists.

PRESIDING JUDGE: In other words, if the materials are available, and Mr. McIntosh says they all are available, then what you want from Professor Collier, if he can give it to you, is either a page reference, if that is the appropriate thing, or a statement that he looked at this thing and found nothing?

MR. TELLEEN: Yes, your Honor.

MR. MC INTOSH: I see no reason why we cannot supply that, your Honor.

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PRESIDING JUDGE: You would have no objection, would you?

MR. MC INTOSH: None at all, your Honor.

PRESIDING JUDGE: Is there anything else you might need help on?

MR. TELLEEN: Beyond that is the issue of -- these are Professor Collier's words -- "fragile documents," or "documents" in vaults," that may be located some distance from, say, the headquarters of the Federal Power Commission. There are several such items listed, I believe.

We would request his assistance perhaps,or specifically, via the notes he may have taken as to those, and just as to those, not anything else, which would be generally available, in the aid of our inquiry.

PRESIDING JUDGE: In other words, you are saying, if I understand you correctly, you prefer not to go out of Washington in your search for this material?

MR. TELLEEN: If for example, the "fragile" vaulted materials are in New Haven and Hartford, yes, your Honor.

PRESIDNG JUDGE: What do you say to that, Mr. McIntosh?

MR. MC INTOSH: I do not want to be uncooperative, but I want to make a point here, your Honor.

The applicant has retained the services of what we believe to be an extraordinary capable and competent expert in this field. This gentleman spent 30-some-days

on this research activity.

We have now put in the record the scope of the work he did, by describing the various documents and materials he looked at.

Very frankly, your Honor, I think the Staff position may be modified if they look at these original documents. If they go out in the field and see what things are really like, rather than relying on the Library of Congress, if they looked at some of these original documents I think it would be a very healthy experience.

I do not think we owe them any obligation to provide them abstracts of materials, materials used by our witnesses, when the documents are available to them as well.

PRESIDING JUDGE: One of the things that bothers me is that I am aware of both the personnel and financial limitations under which the Federal Power Commission operates. While obviously, that is not the concern of the Connecticut Light and Power Company, I think it is a factor to be taken into consideration.

If it does not burden you or Professor Collier to any great extent, I think it might be well for you to, in the spirit of cooperation that you have shown to generously, cooperate just a little bit more in that

respect.

MR. MC INTOSH: Will your Honor excuse me just a moment before I reply?

PRESIDING JUDGE: Mr. Benedikt.

MR. BENEDIKT: On one item, Yale University, I understood that Professor Collier to have said an undergraduate would not be permitted to go into these documents. It happens, if I recall, that the researchers of the DEP were in that category.

PRESIDING JUDGE: "DEP", being the Department of Environmental Protection?

MR. BENEDIKT: Yes. If I understand correctly, they were undergraduates. This would mean those people of competence who had been doing the work would be precluded from continuing the continuity of this research unless Professor Collier furnishes what is being asked.

MR. TELLEEN: Your Honor.

PRESIDING JUDGE: Telleen?

MR. TELLEEN: I think it would be very possible if we went through the 12 pages of Exhibit 11 for us to get som idea rather quickly as to the scope of the materials we are talking about. I think it is generally accepted that books of general -- many books of not general -- circulation would be in the Library of Congress.

Some of the newspapers and manuscript sources appear

to be in Connecticut facilities.

If Professor Collier were to state that a significant number, or examples, of these produced nothing in his opinion, it is not necessarily so that we would ask that all be reproduced or made available to us.

I am saying that I am not saying Staff is going to look at every page of every piece of work Professor Collier looked at.

I am saying we want the opportunity to examine those things we feel might be important. As an aid to the record we think that is an appropriate request.

PRESIDING JUDGE: We are getting close to the end of the day. We are not going to take Mr. Abramowitz at this time. We will go over until tomorrow.

Would there be any point to your talking to Professor Collier and if Mr. McIntosh, between now and the beginning of our session tomorrow and see just what we are arguing about?

MR. MC INTOSH: I think it might be helpful, your Honor.

PRESIDING JUDGE: Why do we not do that.

MR. TELLEEN: Your Honor, it might be helpful, but I hope we would eventually get on the record the specific status of each piece in the bibliography. I don't think

that would be a burdensome task.

PRESIDING JUDGE: I am not very receptive to that idea. I think what we are dealing with is a troublesome problem of burden. I think you ought to do what you can to reach an amicable understanding.

When we resume on January 7th, if you feel that you have in some way not gotten the cooperation you think you are entitled to, you can bring the matter up then.

Incidentally, I want to commend Mr. McIntosh and his associates for their extremely generous cooperation. I think we can rely on their willingness to help to any reasonable extent.

MR. TEEUEN: I would agree, your Honor.

PRESIDING JUDGE: Very well.

Then get together and see what you can accomplish.

MR. MC INTOSH: We do have one problem perhaps we should discuss. I believe Professor Collier has been excused. He has illness in his family in Connecticut. I would like to know if counsel feels he should be here tomorrow.

PRESIDING JUDGE: Can he stay tonight, to continue this discussion?

MR. MC INTOSH: Yes. He will take a later plane home. I was thinking of tomorrow.

PRESIDING JUDGE: I think he can be excused as

far as tomorrow is concerned.

MR. HELLEEN: Your Honor has in mind counsel for the Applicant and for the Staff and other parties getting together off the record?

PRESIDING JUDGE: Precisely.

Ms. Boikess.

MS. BOIKESS: It is my understanding exhbiit 11 is in the record now.

PRESIDING JUDGE: Yes. It has been admitted into evidence.

MS. BOIKESS: It seems to me very important that notwithstanding other aspects of Exhibit 11, it be admitted as a piece of evidence, to explain the basis of Professor Collier's opinion. It states the items he studied, and therefore, whatever other aspects there might be to other parties interested in Exhibit 11, I think it should be in this record as an Exhibit for that purpose.

PRESIDING JUDGE: It is.

MS. BOIKESS: Thank you.

PRESIDING JUDGE: Thank you again, Professor Collier. As I have told you, you need not return tomorrow. I trust the illness is not very serious and that in any event, there will be a speedy recovery.

We will recess until 10 o'clock tomorrow morning.

(Recessed at 4:20 p.m., to reconvene at Friday, November 22, 1974, at 10:00 a.m.)

C O N T E N T S

(FPC, The Connecticut Light & Power Company, Docket Nos. 2576, 2604, 2632 and 2646, at Washington, D. C., Friday, November 22, 1974, Volume No. 5)

WITNESSES		DIRECT	CROSS	REDIRECT	RECROSS
Daniel E. Abramowitz	FPC	498	530	561 569	566
Frederick Benedikt	Conn.	575			

EXHIBITS:	IDENTIFIED	RECEIVED
13 - Profile of the Housatonic River	525	525
14 - Graph Showing the Rate Curve of the Gauging Station at River 19.2 of the Housatonic River	526	526
15 - Graphs Showing the Daily Generation of the Four Projects for July, August and September, 1974 and for July, August and September, 1971	527	527
16 - Map of the Housatonic River's Lowest 20 Miles	528	528
17 - Five Computer Printouts concerning Backwater Studies of the Housatonic River	528	528
18 - Graph Showing Water Surface Profiles of the Housatonic River for the Lowest 13 miles of the River	529	529

ITEMS BY REFERENCE:

H - North Atlantic Regional Water Resources Study, Appendix K, Navigation, Page K-106, dated May 8, 1972	492	492
I - Northeast Flood Studies, Report on Review of Survey for Flood Control, Housatonic River Basin, Pages 12 & 13, dated Sept. 13, 1963	493	493

ITEMS BY REFERENCE:	IDENTIFIED	RECEIVED
J - United States Geological Survey, Water Supply Papers and Water Resources Data for Connecticut for all years of record	493	493
K - Register of Dams in the United States, 1958 Edition, compiled by T. W. Mermel, published by the United States Committee on Large Dams	495	495
L - FPC Form No. 12, Power System Statement, for the years 1950 thru 1973 filed with the FPC by Conn. Light & Power Co.	495	495
M-1 - U. S. Geological Survey Quadrangle Map for Ansonia, Connecticut dated 1972	497	497
M-2 - U. S. Geological Survey Quadrangle Map for Milford, Connecticut dated 1960	497	497
N - U. S. Coast and Geodetic Survey Map No. 219, North Shore of Long Island South - Housatonic River and Milford Harbor, dated February 10, 1973	497	497

RECESSES:

Morning - 551

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BEFORE THE

FEDERAL POWER COMMISSION

In the Matter of:	:	Project Nos. 2576
	:	2604
THE CONNECTICUT LIGHT AND POWER COMPANY	:	2632
	:	2646

Hearing Room F
Federal Power Commission
825 North Capitol Street
Washington, D. C.
Friday, November 22, 1974

The above-entitled matter came on for further hearing, pursuant to recess, at 10:00 a.m.

BEFORE:

ISRAEL CONVISER, Presiding Administrative Law Judge

APPEARANCES:

(As heretofore noted:)

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